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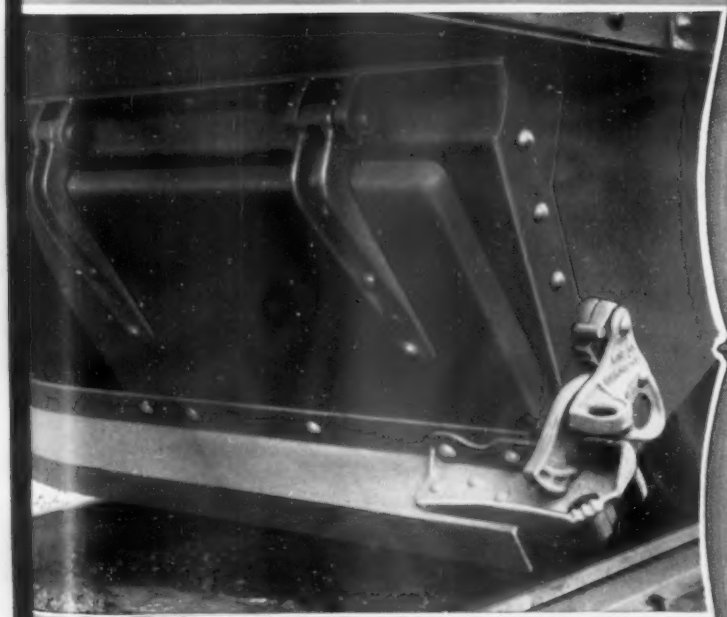

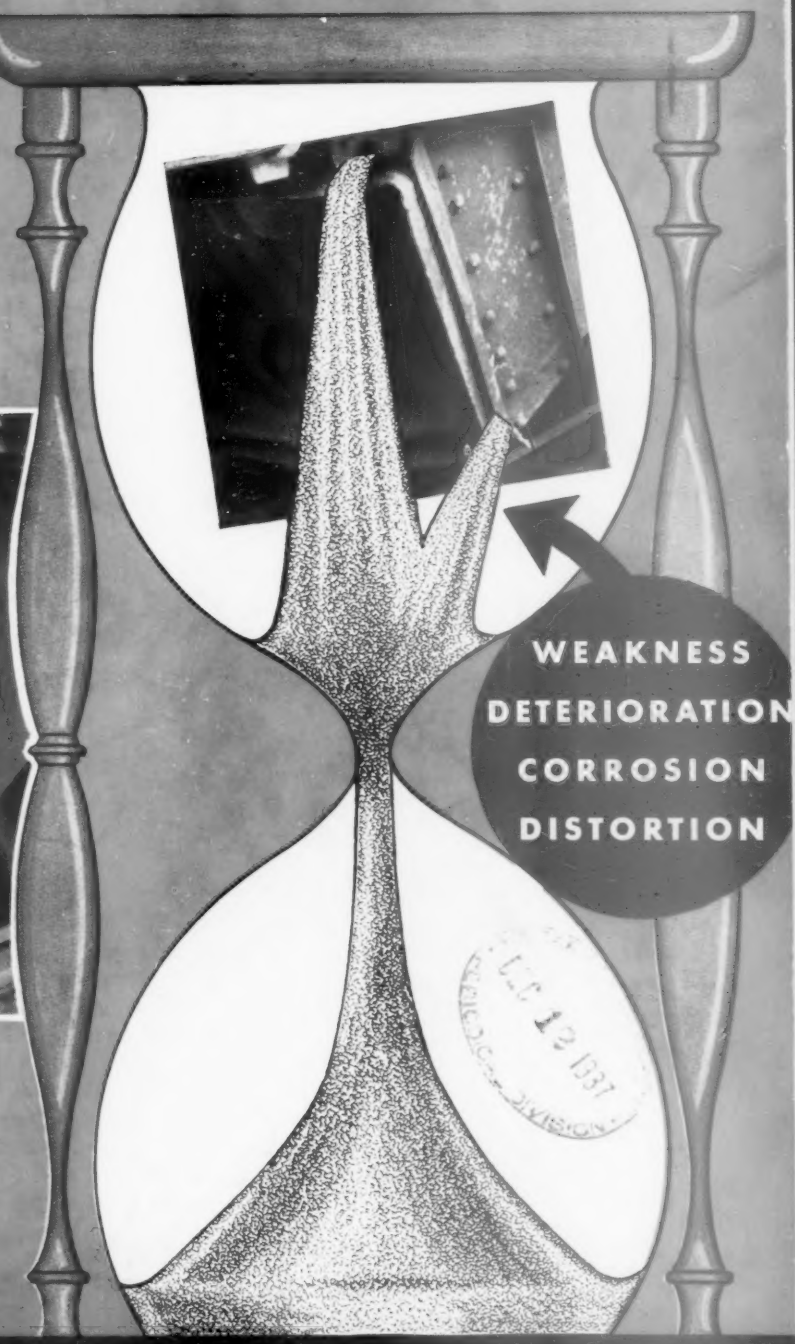

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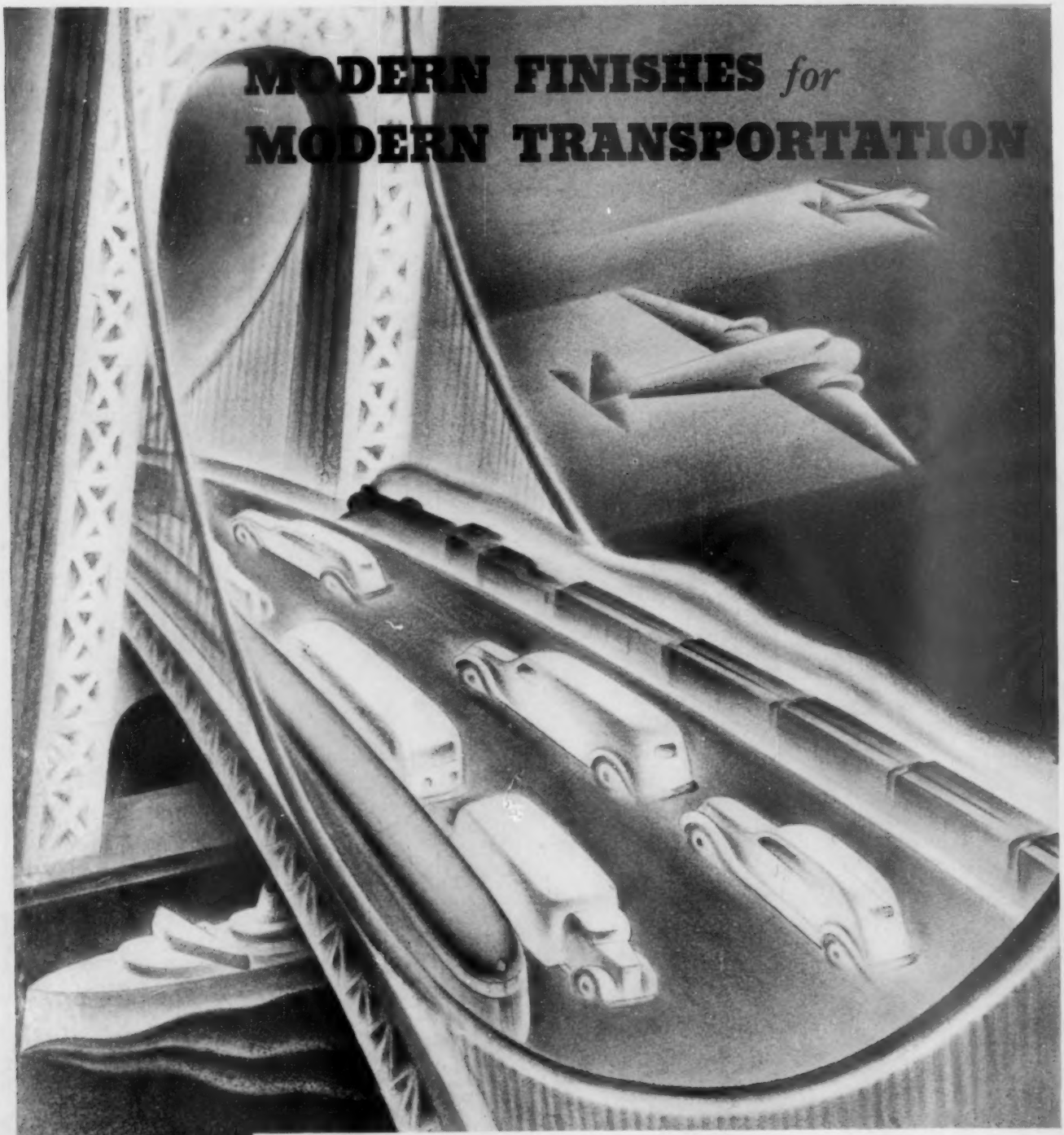

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Railway Age

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P. & L. E. Westbound Freight at B. & O. Junction on the P. & L. E. Railroad

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RAILWAY AGE

How Revive Business?

Never in the history of the United States were economic policies advocated by labor union leaders and their radical political supporters carried out by government and business to the extent that they have been during the last four and one-half years. Never before in any equal period did there occur so little recovery from a depression as during the seven and one-half years between the stock market panic in October, 1929, and the end of May, 1937, and especially during the last four and a half years. Never before, apparently, did there occur within six months as drastic a decline of general business as between the end of May and the end of November, 1937. Allowing for seasonal differences, the decline during this period of railroad freight loadings—the best single measure of the total amount of business done in the country—was 30 per cent. Available statistics do not record any previous decline equal to this in the same length of time.

There are differences of opinion regarding the causes of this unprecedented failure of recovery and of the unprecedented decline of business by which it has been followed. Whatever the causes, there can be no question about the effects; and those who have opposed the economic policies that have prevailed during the last four and a half years naturally consider them the main causes.

Suggestions from Those Whose Policies Have Failed

A few days ago the American Federation of Labor issued a statement advocating a six-point program "by government and private industry to sustain the workers' buying power and stimulate industry." It asserted that whether the business recession will continue will depend largely "on our ability to maintain buying power close to its present levels, so that inventories of clothing and household supplies may be quickly consumed and a strong market provided for durable-consumer goods, such as homes and automobiles." President Roosevelt has since sent a message to Congress advocating certain policies intended to revive and increase residential building, and Secretary of Agriculture Wallace has made a speech trying to tell what should be done to revive business.

It will occur to some that it requires considerable hardihood for those whose policies have been unprecedentedly tried during a period of unprecedented failure of recovery, to offer suggestions during a period of unprecedentedly rapid business recession for improving business. Furthermore, the policies suggested, considering their sources and character, can hardly be expected to be enthusiastically received by those who have steadily opposed similar policies emanating from the same sources that already have been tried with results the exact opposite of those predicted by their advocates.

How Maintain Wages and Employment?

The most important of these policies have been adopted especially in the supposed interest of "labor" upon the assumption that whatever was good for labor already employed would be good for everybody. Therefore, we quote below each of the American Federation of Labor's six points with our comments.

"1. Maintain wages and employment at the highest possible levels, with firm determination to avoid wage cuts."

Wages in most large industries were the highest ever paid before the recent business recession began, and have been raised in some of them while it has been occurring. Why, then, had we had a failure of recovery? And why are we now in the midst of a drastic business recession?

The total payroll any industry can meet depends on its gross earnings. If the highest possible wages are maintained and the payroll must be reduced because gross earnings have declined, the reduction of the payroll obviously must be accomplished by reducing employment. To ask for the maintenance of both wages and employment at the highest possible level during a period of recession is to ask many industries to bankrupt themselves, and is in strict accordance with the policies that have prevailed during the last four and a half years.

"Sustained Demand and Profitable Operation"

"2. In any industry where sustained demand and profitable operations make it possible, raise wages."

Statistics of business indicate there is no industry in which there has been "sustained demand" during the last six months. If high wages increase public purchasing power and thereby sustain demand for products, why have not the highest wages ever paid sustained demand? If wages should be raised in an industry in

which there is sustained demand and profitable operation, what should be done in an industry in which for years there has been wholly unprofitable operation and recently has been rapidly declining demand?

Since last May the freight business of the railways has declined from 16 per cent more to 18 per cent less than in 1936. They were operating very unprofitably before; and largely as a result of the decline in their business their net operating income has been less in every month since June than in 1936 and in October was 32 per cent less than in October, 1936. On the principle stated by the A. F. of L. should they have raised or reduced wages when both their traffic and net earnings began declining? However that may be, the railways did after the middle of the year advance the wages of their employees, in the teeth of declining business and net operating income; and this does not seem to have helped anybody's business very much.

"Stimulate Heavy Industries"

"3. Stimulate production and employment in heavy industries by taking measures to prevent postponement of justifiable plans for plant expansion and purchases of new equipment and to encourage building of all types. Special measures are needed to make credit available to business, for many programs which would provide employment are being postponed because credit cannot be obtained."

Why be so reticent about stating just what measures should be taken to prevent "postponement of justifiable plans for plant expansion and purchase of new equipment," especially in industries the business and net earnings of which are rapidly declining? What measures, for example, should have been adopted to have enabled the railways within recent months to avoid "postponement of justifiable plans for . . . purchase of new equipment?" The A. F. of L. says "special measures are needed to make credit available to business . . . because credit cannot be obtained." What "special measures?" Probably there is as much surplus capital available right now as there ever was in history. There is also greater need for increased investment of capital than there ever was. The railways cannot get and use their share of this surplus capital because decline of their gross earnings and increase of their wages, other operating expenses and taxes have so greatly reduced their current and immediately prospective net operating income. Other industries also cannot or will not make use of this surplus capital. Why not? The answer to that question, whatever it may be, *is the explanation of, first, the failure of recovery and, second, the recent drastic decline of business.* What is the A. F. of L.'s answer to it? It does not say.

"Promote Business Confidence"

"4. Prepare for prompt payment of unemployment compensation, which begins in twenty-two states in January and will be an important addition to workers' buying power."

Might it not increase the buying power of the workers more to adopt policies that would increase employment than to expedite payment of unemployment insurance to them because they are unemployed?

"5. Take measures to promote business confidence."

"Business confidence" in what? The only kind of "confidence" that ever did or ever will improve business is *confidence in future profits* inspired by policies of government, labor and business that justify that confidence. What policies to inspire such confidence does the A. F. of L. advocate? More of exactly the same kind of policies that have prevailed during the four and a half years during which there has been an unprecedented failure of recovery and an unprecedentedly drastic recession of business. The success of such policies in preventing revival of business confidence heretofore unmistakably indicates what would be the effects upon business confidence in the future of continuing those that have prevailed and adopting more like them.

Relations Between Employers and Employees

"6. Improve relations between employers and employees: (a) Employers, by recognizing unions and negotiating with them. (b) Union members, wherever a satisfactory collective bargaining relationship exists, by co-operating to cut costs by improving efficiency."

Suggestion (a) is only too obviously self-serving. Suggestion (b) raises some interesting questions. Does it mean, as it apparently does, that union members should co-operate "to cut costs by improving efficiency" *only* "wherever a satisfactory collective bargaining relationship exists?" Suppose that "satisfactory collective bargaining relationships" cannot be established in one or more industries because relationships that would be satisfactory to labor leaders would not be satisfactory to employers. Does the A. F. of L. mean that in that case union members should sabotage efficiency until employers yield to their demands regardless of the effects upon business, employment and the public welfare?

The existing collective bargaining relationships on the railroads appear to be satisfactory to labor union leaders and members. What, then, in accordance with suggestion (6-b), are they, and especially those who belong to the A. F. of L., going to do to help railway managements "to cut costs by improving efficiency?" They can use their influence to prevent Congress from passing the bill now pending to limit the length of freight trains, which would increase costs by impairing efficiency. They can agree to changes in many working rules which now increase costs by impairing efficiency. They can do many other things to reduce railway costs by helping increase output per employee, which during the last twenty years has increased less than 40 per cent, while average annual compensation per employee has increased about 108 per cent. Will they do them? If not, of what value are "satisfactory collective bargaining relationships" to railway security owners and the public that pays railway rates?

Everybody knows now that there is something radically wrong with business. It is silly twaddle to imply

that its decline during the last six months, resulting in the terrific losses it has caused business, has been due to some kind of conspiracy of business leaders to discredit prevailing government and labor economic policies. Business men may commit suicide in Japan to spite somebody or other, but not in the United States.

What is Wrong With Business

What has been and is wrong with business is the same thing that always is wrong with it in a period of depression or recession—viz., that the *buying public did not increase its buying enough to cause recovery, and now has reduced its buying so much as to cause recession.* What is called "labor" is only part of the buying public. It also includes farmers, small business men, professional men and "white collar" workers. It includes every kind of business concern; and curtailed buying by business, especially of durable goods, has been the most important cause of the failure of recovery and of the recent recession. The theory that "increasing the purchasing power of labor" by advancing its hourly wages will cause recovery and maintain prosperity has been completely exploded by the experience of the last four and a half years, and especially of the last six months, because this failure of recovery and business recession have occurred in spite of the fact that *employed* labor has had more purchasing power than ever before.

Depressions, Recessions and Durable Goods

The entire economic history of the last century demonstrates that the great fluctuations in business that cause depressions, recessions and recovery occur principally in the buying of durable goods that *are not bought by labor.* Railway employees do not buy locomotives and cars. The employees of manufacturers do not buy machine tools or the materials used in expanding plants. Durable goods are bought principally by business *as an investment to increase its profits.* Even one-half of the country's housing is constructed by business as an investment from which to derive profits. The failure of buying of durable goods adequately to increase was the principal cause of the failure of recovery. Decline in the buying of durable goods has been the principal cause of the recent business recession. Only a vast increase in buying of durable goods will stop the recession and cause complete recovery. Only complete recovery will restore full employment and only full employment will restore the purchasing power of labor as a whole.

How, then, revive adequately the buying of durable goods? There is but one answer to that question: Allow the industries that want to buy enormous quantities of durable goods to earn the profits necessary to enable them to increase their purchases of durable goods, and give them reason for confidence that they will derive satisfactory profits from their present investment and from additional investment made by them in durable goods.

How Restore Business Confidence?

The American Federation of Labor advocates "special measures" to create "business confidence" and increase buying of durable goods. Other advocates of its policies of never reducing wages, but always increasing them, are talking in the same way. Their emanations sound conservative, intelligent and intended to be helpful to business; but they are not. Only measures that will give confidence to those who wish to make huge investments in durable goods that they will increase their profits by doing so will increase business and employment. The policies followed for four and one-half years, of trying to improve business by curtailing current and prospective profits, must be abandoned and there must be substituted policies tending to increase current and prospective profits, if the business recession is to be halted and followed by real recovery and prosperity.

$2 Per Hour

Our contemporary "Labor" announces with great satisfaction that building contractors in New York have raised the wages of electrical workers to $2 an hour. We wonder just how enthusiastic the subscribers to "Labor" would be about paying such a rate for electrical work which needs doing in their own homes. Our guess is that most of them would do the work themselves, or get along somehow without it. A rate of $2, or even $10, an hour doesn't mean much unless a large number of people are willing to hire men at that price.

For the life of us, we can't understand why "Labor," a publication supposedly devoted to the interests of railroad employees, can be so happy about a wage movement whose only effect on railroad employees will be to increase the cost of housing to them—reducing the amount of money they will have left for other purposes, or forcing them to content themselves with less attractive homes than those to which they are accustomed. Sympathy for the unfortunate is commendable, of course, but a craft which demands $2 an hour scarcely requires charitable help at the expense of other workingmen, many of whom receive far less.

But maybe "Labor" isn't concerned with the interests of railroad employees, except in those cases where fostering such interests is incidental to harming railway owners. If it were honestly concerned with the welfare of railway employees, it would be as indignant at extortionate prices for services and commodities employees buy as it would at a movement to reduce railway wages. Because hiking the employee's living costs is exactly the same thing in its effect on the employee as reducing his wages.

Reading Receives Lightweight Streamline Train

Five cars of stainless-steel construction—Will run on fast schedule between Philadelphia and New York

THE Reading Company has received a lightweight streamline stainless-steel train of five cars from the Edward G. Budd Manufacturing Co. for service on the Reading-Jersey Central Line between New York and Philadelphia, Pa. The train, which will be placed in regular service on a new fast schedule on December 13, is drawn by a remodeled steam locomotive of the Pacific type, two of which have been encased in streamline shells of stainless and painted steel, the lines of which conform with the sheathing of the cars, thereby presenting a continuity of line throughout the train. The remodeling of the locomotives was carried out by the railroad at its Reading shops.

The train is made up of four chair cars and one tavern-dining car. The two end chair cars are constructed as observation cars to obviate the necessity of turning the entire train around after its arrival at either terminal. The end cars each contain 56 coach seats and 14 individual lounge chairs and the other chair cars each have 56 coach seats and 12 individual lounge chairs. The dining car accommodates 24 passengers at tables in the dining room and 27 passengers in the tavern or cocktail lounge.

The end cars are identical in layout and structure, but they differ widely in color treatment. In car No. 1 the chair-car section and lounge walls are olive brown, the ceiling is flesh colored, with a wide longitudinal band and stripes of terra cotta along the center. Painted moldings are used in the ceiling and on the side walls, and unpainted stainless steel is used for flashings and heater ducts. Window headers, roller-shade guides and side-light longitudinal moldings are aluminum. The roller curtains are diamond-pattern Pantasote cocoa colored on the inside face, and silver finished on the outside face. The windows also have drapes of buff color with a fine gold stripe. All window sills are black.

Interior Decoration and Appointments

The Heywood-Wakefield two-passenger seats in the chair-car section are of the rotating type with individual reclining backs and sliding cushions. The seat cushions are molded sponge rubber, and the backs are spring construction. The mohair seat covering is of coral color, but woven to give a narrow striped effect.

The individual arm chairs in the lounge are of wood-frame construction with molded sponge-rubber cushions and spring backs. All exposed woodwork is Sapeli mahogany. The chairs are of two designs, and some are covered with the same color fabric as is used on the coach seats and others are covered with a brown fabric.

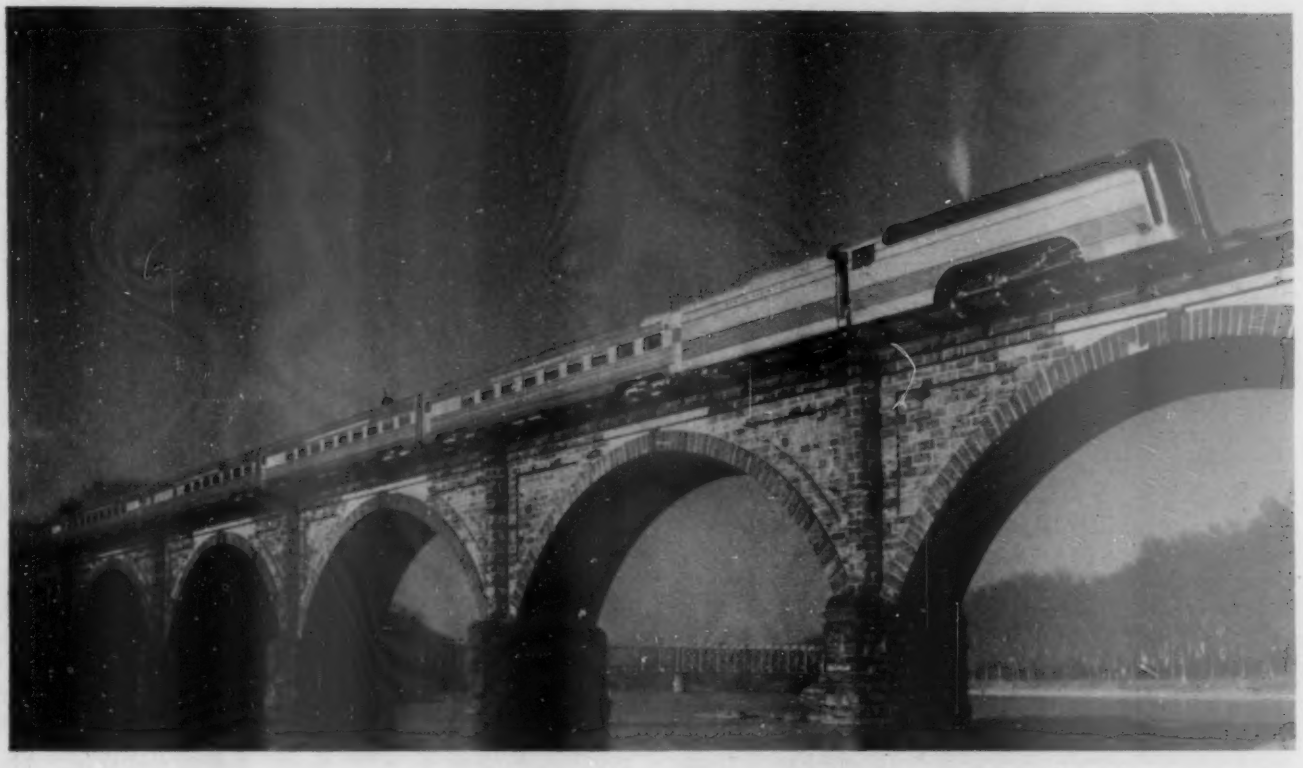
The flooring throughout the passenger compartment is finished in light and dark walnut Linotile in 6-in. squares, laid in a geometric pattern. The lockers, toilets, and vestibule floors are covered with Malay brown jaspe linoleum.

A decorative utility table with open shelves at the sides is placed at the rounded end of the lounge. The top and edges of this table are finished in Sapeli mahogany with the front finished in East Indian rosewood, Sapeli mahogany, Maidou burl and stainless steel.

The chair-car section and lounge walls of car No. 5—the observation car at the other end of the train—are light aquamarine, and the ceiling is lemon cream, with a russet brown band in the center. Window headers, roller-shade guides and side-light longitudinal moldings are aluminum. The cocoa-colored inside and silver outside roller shades and the buff-colored drapes are the same as in car No. 1.

The seats and chairs are similar in design to those of the first car, but the mohair covering of the seats and of some of the chairs is chamois color into which is worked a feather pattern of a slightly darker shade, and the remaining chairs are upholstered in striped green. The flooring in this car is also laid in a geometric pattern, but chocolate color is used for the background and black is used for the figure. The toilet rooms, vestibule and lockers will have autumn brown jaspe linoleum floor covering. The table at the rounded end is the same as in car No. 1.

The second and fourth cars are also identical in lay-



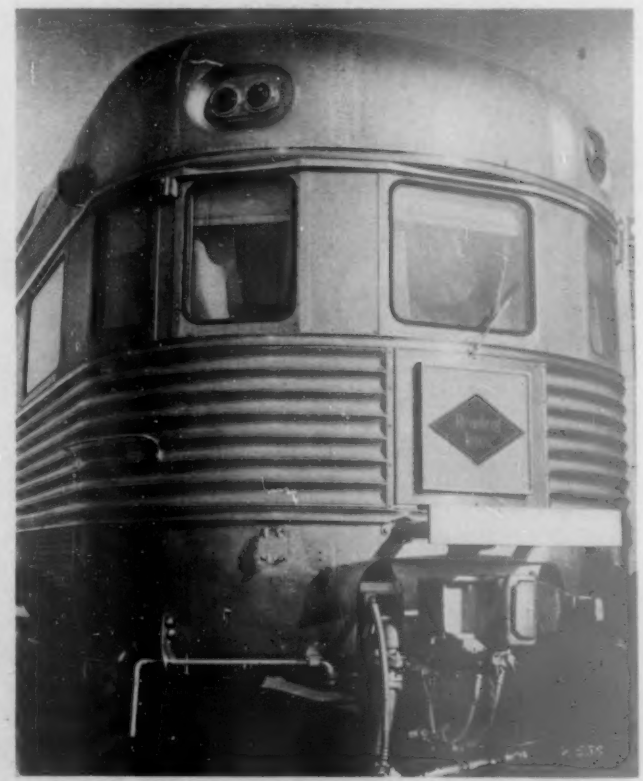
out, but differ from each other in the color treatment.

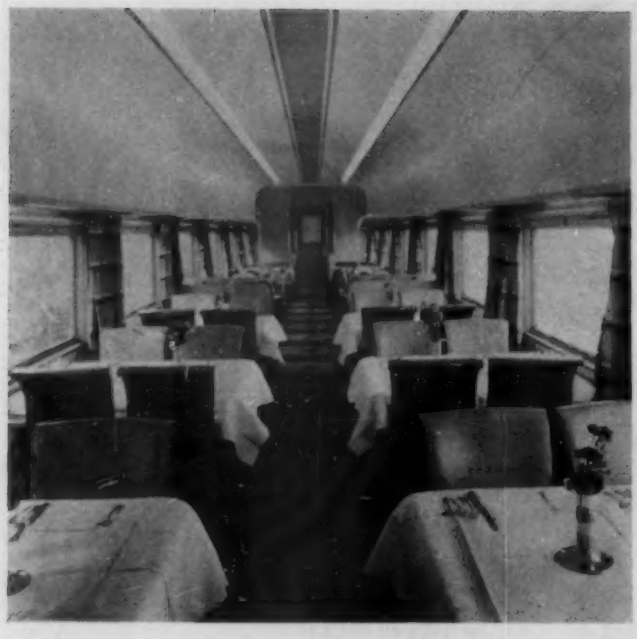
Car No. 2 has clay-colored side walls and a drab-buff ceiling, with a band of cloudy green along the center. The seat covering in the chair-car section is a green plush with the pile trimmed to present a rippled effect. The individual chairs in the lounge are similar to those used in the lounges of the other cars. The covering on some is the same as used on the two-passenger rotating seats in the chair-car section, and on the others is a figured frieze, the background of which is a light shade of taupe on which are line figures in pale shades of red and green. The window drapes are tan silver, and the shades and window sills are the same as used in the other cars. The flooring of the main body is Linotile laid with a light-gray background and a dark-green design, and the lockers, vestibule and toilets are laid with jaspe linoleum.

Car No. 4 has light olive-green side walls, darker olive-green end walls, and a sand-gray ceiling, with a band of grey green through the center. The seat covering in the chair-car section is brown frieze with tan chalk stripes in a herringbone pattern. In the lounge some seats are covered with this same fabric and the others are covered with a pin-striped gold frieze. The window drapes, sills and roller shades are the same as in car No. 4. The flooring is Linotile laid in a geometric design, dark brown for the background and light brown for pattern. The vestibule, lockers and toilets have rose taupe jaspe linoleum floor covering.

The middle car contains a 24-passenger dining room, a tavern and a kitchen. The tavern is fitted with sofas, chairs and tables for the accommodation of 27 passengers, and is offered for use as a cocktail lounge. This section is separated from the dining room by low partitions surmounted by glass panels which extend as high as the upper window rail. The side walls of this car are olive brown, the ceiling is flesh, similar to car No. 1, but the center band in the ceiling is Indian red. The roller shades and window sills are of the same colors as in the other cars, but the drapes are a green and brown plaid. The dining-room chairs are of wood-frame construction, finished in gray oak and covered with Lackawanna tan leather with red piping. Cushions and backs are sponge-rubber filled.

The tavern has 11 individual tubular-steel chrome-plated chairs upholstered and covered with the same materials as used in the dining-room chairs. There are also four built-in corner settees in the tavern. These will each easily accommodate four passengers—three





The Diner

along the straight side wall section and one in the curved portion at the corner. These are cushioned with sponge rubber and covered with red leather. The tables in the tavern are furnished with black rubber tops and stainless-steel edge molding. There are four oval-top pedestal tables, four rectangular-top tables secured to the wall and fitted with a leg at the aisle, and one irregular-shaped table also secured to the wall and supported by a leg at the aisle. The dining-room tables, of which there are six, are approximately 3 ft. wide and 3 ft. 7 in. long and are attached to the wall with hooks in sockets and supported at the aisle with a gray-oak leg.

The floor covering both in the dining and tavern sections is Chase "Seamloc" carpet with a raisin-colored background and a henna pattern. A Velvetex pad is placed under the carpet. The flooring in the passageway around the kitchen and in the vestibule to the dining room is chocolate and dark walnut Linotile. The toilet and locker floors are covered with autumn-brown jaspe linoleum.

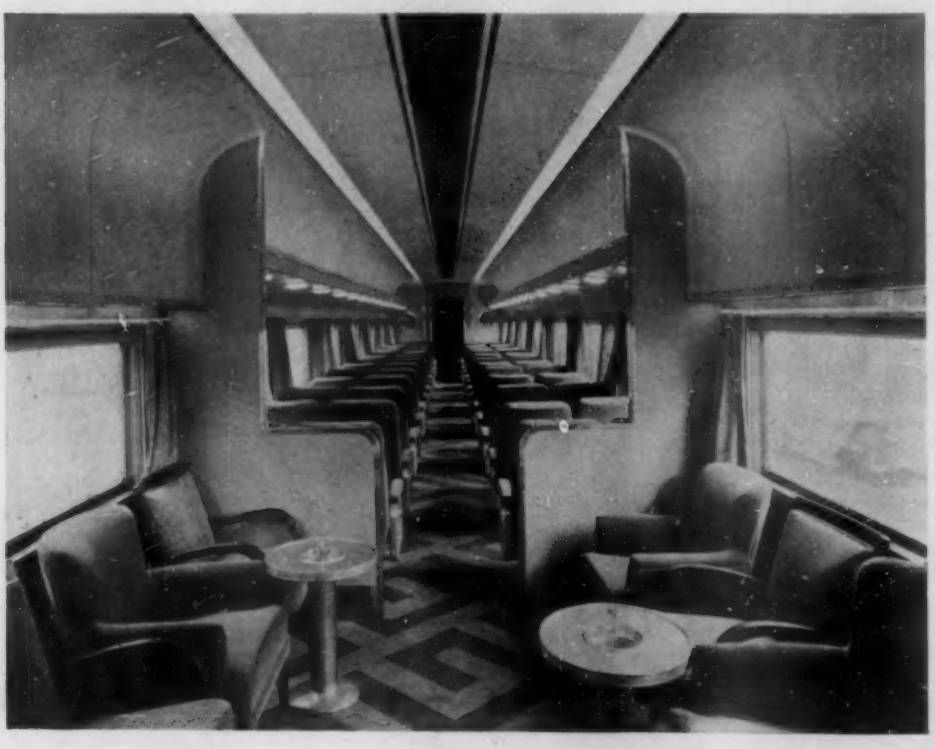
The complete and compact kitchen occupies about 22½ ft. at the end of the car. An aisle for passengers leads around the kitchen from the end of the car to the dining room. All the equipment in the kitchen is made of stainless steel, with the exception of the coal-burning range, and all exposed side wall is covered with sheet stainless steel. Miscellaneous hardware is chromium plated.

The kitchen equipment comprises a refrigerator at the extreme end of the kitchen, a coal range and water boiler, a broiler, two coal bins—one with a crew's locker above it—a steam table, a coffee urn which stands on the steam table but the faucet of which projects into the pantry, two sinks with swivel faucets—one in the kitchen and one in the pantry—a service shelf, a low kitchen refrigerator, a fruit chill box, a liquor refrigerator and liquor locker, and numerous small lockers and compartments for storage of dishes and supplies.

All car sheathing and structure, except the end underframes, are the well-known 18-8 stainless steel. This is used in two strengths. The high-tensile material has a tensile strength of 150,000 lb. per sq. in. and is used where light weight and strength are of prime importance, and the low-tensile material has a tensile strength of 100,000 lb. per sq. in. and is used where workability or special finish is required. The Budd Shotweld process was used in the fabrication of these cars.

Features of Construction

Fundamentally, the structure of these cars is a box girder wherein the roof and under structure serve as compression and tension chords, and the two modified Pratt-truss side frames are the webs. The end structure is designed to withstand buffing, traction, vertical and lateral loads that are to be expected in service and as



Looking from the Lounge Section in One of the Coaches — There Are Twelve Individual Chairs

There Are Two Observation-Lounges, One at Each End of the Train—Each Seats Fourteen Persons

required by Railway Mail Service. The end underframes are made of Cromansil steel, arc welded into a unit, subsequently stress relieved and riveted to reinforced body members.

Doors are of all-metal construction, with a light of ¼-in. shatterproof glass in the upper portion. The stainless steel used in the outside doors is in harmony with the exterior metal. The passenger steps are so constructed that they are raised into the car body when the vestibule trap doors are closed, presenting a smooth exterior appearance.

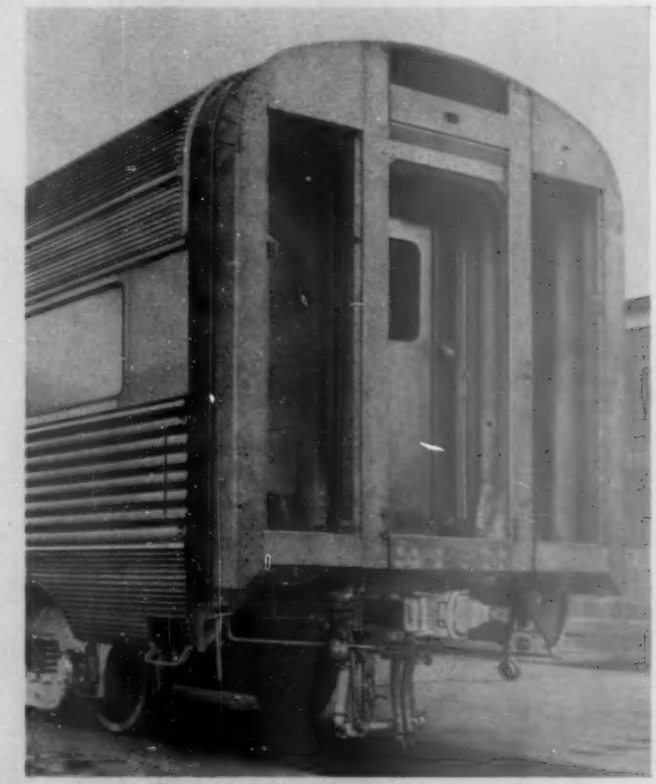
All passenger side windows are double-glazed, with ¼-in. polished plate glass in the outer frame and ¼-in. shatterproof plate glass in the inner frame, with about ¼ in. of air space between them. The outer window frames are attached directly to the car body, while the inner sash is hinged at the top to facilitate cleaning. The window frames are of all-metal construction and the glass is held in place by molded rubber strips. The toilet-room windows are single-glazed, with shatterproof flashed opal glass.

The cars are thorughly insulated. The side walls, floors, roofs and ends are insulated with Stonefelt and the double-glazed windows further reduce heat losses. The side, end and roof insulation is held in place by metal clips and bands. The sub-floor insulation is supported by flat sheets of stainless steel on the under side.

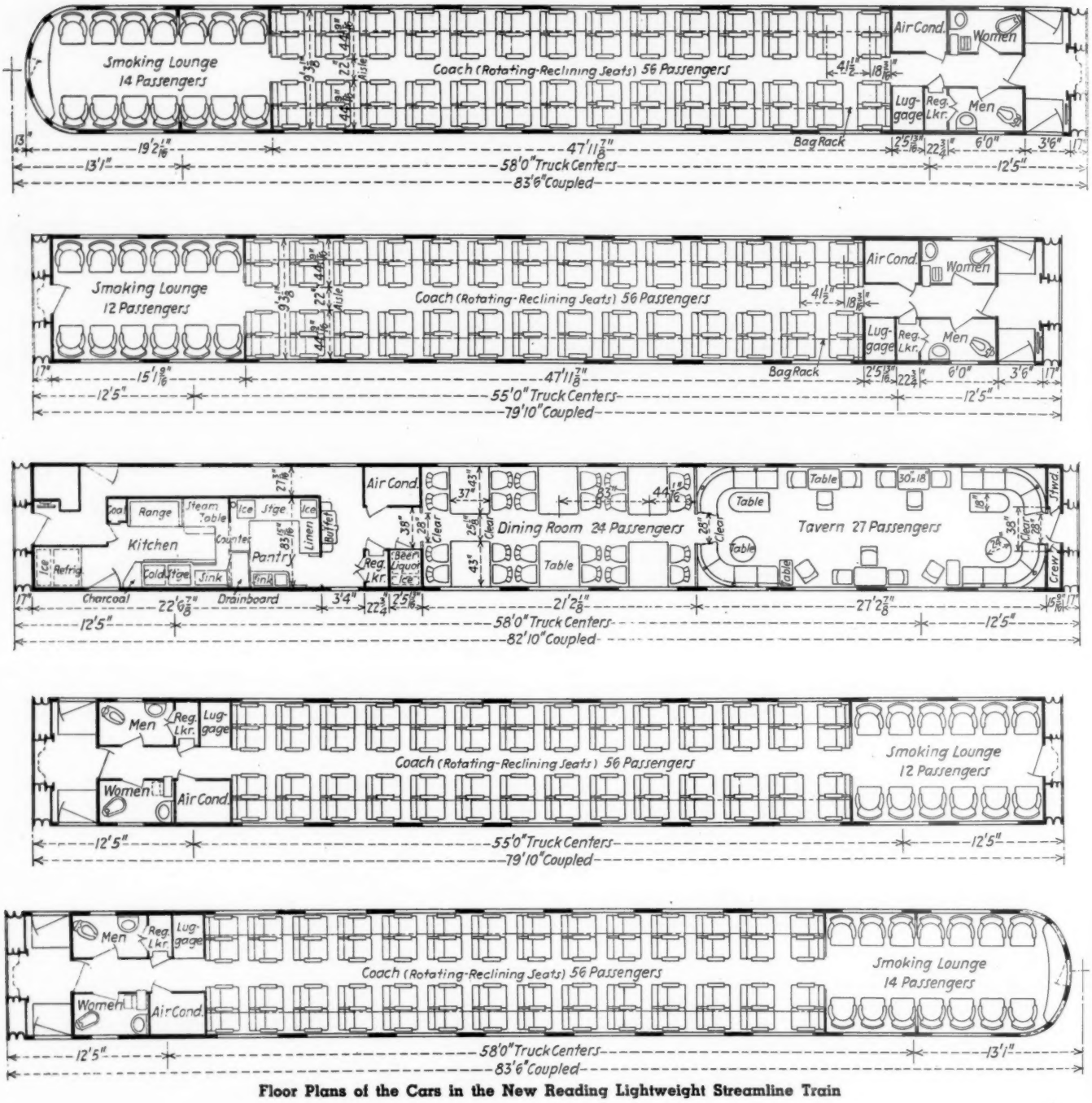
Air Conditioning and Lighting

The Airtemp electro-mechanical air-conditioning equipment comprises a compressor-condenser unit of about 6½ tons' capacity mounted beneath each car floor, and an evaporator unit placed in a locker in each car body. A controllable amount of filtered fresh air is taken through louvered openings in the car roof, mixed with air drawn from the passenger compartment and forced through the conditioning unit and into the distributing duct which is made of galvanized steel insulated with ½-in. Deadnox. This duct, which is placed above the ceiling between the light ducts, allows the air to escape through a concealed narrow slot in the lower edge of each side. Incorporated in the evaporator is a steam heater coil of about 80,000 B.t.u. capacity for use when heated air is required. Finned copper-tube steam radiators are placed at the base of the walls for general car-heating purposes.

This is the first complete train in which the Vapor cor-



End of Coach Showing the Full-Width Diaphragm

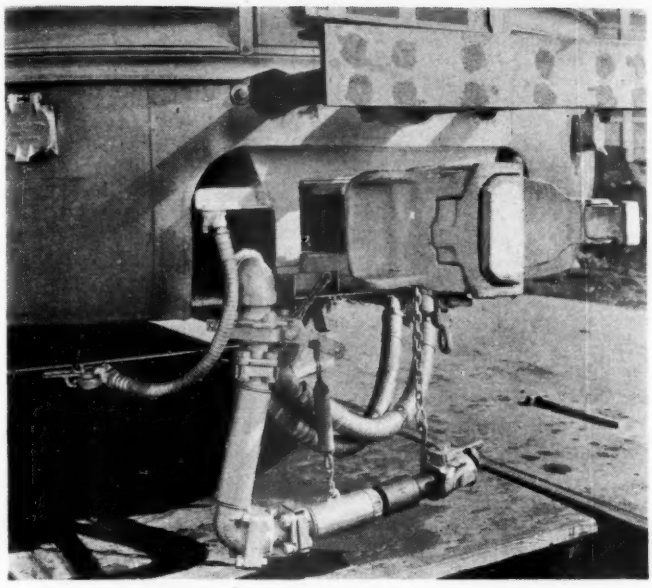


Floor Plans of the Cars in the New Reading Lightweight Streamline Train

relative control of both heating and cooling has been installed. With this control system the only manual operation required is in changing over from cooling to heating or vice versa. In cooling the differential between the inside and outside temperatures is effected automatically under the control of an adjuster thermostat located in the fresh-air intake. With an outside temperature of 100 deg. or higher the inside temperature of the car is under control of an 80-deg. maximum thermostat. For each 3-deg. drop in outside temperature below 100 deg. F. a drop of 1 deg. is automatically effected in the temperature inside the car until the inside temperature has dropped to 72 deg. Should the outside temperature drop below 72 deg., with the control set for cooling, the adjuster thermostat is automatically dropped out of the circuit, thus preventing any further lowering of the inside temperature under outside temperature control. Both the overhead and floor heat are tied in the same automatic circuit controlled by an adjuster thermostat, in this case located in the recirculating air duct. This is set for a 3-deg. differential between the overhead and floor heat. Should the temperature at the floor drop below the 3-deg. differential, steam is automatically admitted to the floor radiators.

A separate ventilation system is installed in the kitchen. Fresh filtered air is delivered directly to the kitchen without passing over evaporator coils and is moved by exhaust ventilators the capacity of which slightly exceeds that of the intake blowers. One intake blower feeds two ducts which extend along the sides of the doorway between the kitchen and dining room. These ducts deliver a curtain of air across the doorway, which is drawn into the kitchen by the action of the exhaust fans, thereby preventing the escape of kitchen odors.

The electrical system operates at 32 volts d.c. The current is supplied by Exide 1,000-amp. hr. batteries and Safety Car Heating & Lighting Co. 20-kw. generators. The batteries are carried in stainless-steel



One of the Controlled Slack Couplers

battery boxes mounted beneath the cars. The generator is mounted longitudinally under the car and connected to an axle by the D.R. drive.—a combination of vee belts, bevel gears and longitudinal drive shaft.

Provision is made for the operation of the air-conditioning equipment from a standby source of power. The motors are built for operation on both 32-volt d.c. and 220-volt a.c. The cars are equipped with both d.c. and three-phase a.c. receptacles for receiving standby power.

Direct and indirect concealed lighting is used in various parts of the cars. The indirect lights are concealed in two ducts recessed in the ceiling. The ducts are painted white and reflect light onto the car ceiling to create an almost shadowless illumination in the car. Direct lighting supplements the indirect system in the lounges, dining room and tavern; a cove is constructed over the windows, and in the chair cars light fixtures are recessed in the under side of the bag racks. The cove over the windows is constructed behind the side ceiling lining and is glazed on the under side in a horizontal plane, the light from this source offering comfortable reading conditions to passengers in the sections so equipped. The bag-rack fixtures are centered over each seat and concentrate their light downward.

The vestibules, aisles and toilets are lighted from Luminator overhead fixtures recessed into the ceilings of these sections.

The power brake is the Westinghouse Air Brake Company's electro-pneumatic modified H.S.C., operated by air pressure supplied by the locomotive and controlled electrically. There is a belt-driven speed governor on each of two trucks on the train which controls braking pressures at various speeds. These trucks are under the diner and one of the intermediate coaches. The hand brakes are of the wheel type mounted on a lightweight housing.

The Trucks

The cars are carried on four-wheel trucks of the conventional equalized swing-bolster type. The wheel base measures 9 ft. Each truck is fitted with four Houde Hydraulic shock absorbers to dampen the lateral swing action. Vibration and sound deadening is controlled by the use of insulation at strategic points. All castings are alloy steel, heat treated, and the equalizers are forged steel, machined all over. The axles are fitted with 36-in. multi-wear wheels and Fafnir combined ball- and roller-bearing journal boxes. The radial load is carried on hardened solid rolls, while the lateral thrusts are resisted by high-capacity ball bearings. The bearing housing is of alloy steel, hardened, and is reversible for double wear.

Weights of Cars in Reading Lightweight Streamline Train

Car No.	Weight, ready to run, lb.
1	98,914
2	95,774
3	110,399
4	96,024
5	98,914
Total	500,025

The Locomotive

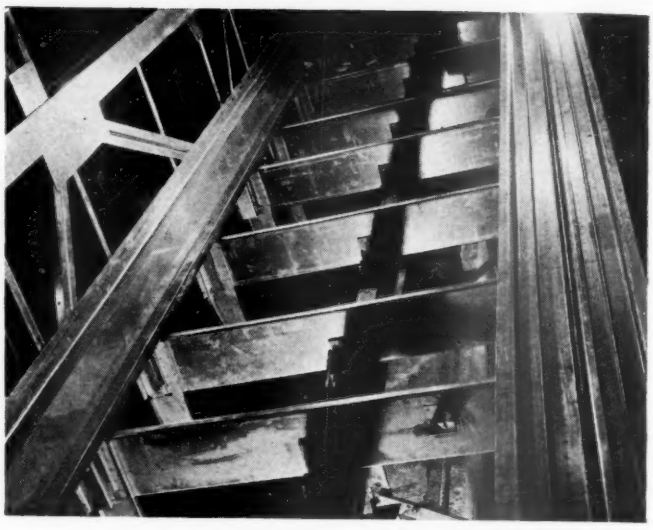
The locomotives, two of which have been streamlined for use with this train, are the road's Class G1SA Pacific type, some of which were originally built by the railroad at its Reading shops. The two locomotives in question are from this group. They develop a tractive force of 40,900 lb., with a boiler pressure of 220 lb., cylinders 25 in. in diameter by 28 in. stroke, and driving wheels 80 in. in diameter. The boiler has a total evaporative heating surface of 2,984 sq. ft. The superheating surface is 621 sq. ft. and, originally built to burn anthracite coal, the firebox has a grate area of 94.5 sq. ft.

The locomotive and tender have been shrouded and

The Vestibule Open, Showing the Step Operating Mechanism

streamlined with stainless and painted steel, the latter conforming to the lines of the coaches. An appearance of continuity of the sides of the coaches and tender has been effected by extending the sides of the latter beyond the tender end sill to enclose the rounded observation end of the forward car. A horizontal extension from the top of the tank produces a similar effect in the roof lines by enclosing the hooded portion over the end of the car. Louvers in the front of the shrouding near the top admit air which flows out of a port in the top of the shrouding just back of the stack to function as a smoke lifter.

The estimated weight of the rebuilt locomotive is 285,000 lb. and the total weight of the engine and tender is approximately 460,000 lb.



Details of the Underframe and Side Construction

Partial List of Equipment and Materials on the Reading Lightweight Train

Stainless steel	Sharon Steel Corp., Sharon, Pa. Superior Steel Corp., Pittsburgh, Pa. Eastern Rolling Mill Co., The, Baltimore, Md.
Dowmetal	Dow Chemical Co., Midland, Mich.
End underframes	Lukenweld, Inc., Coatesville, Pa.
Truck sets	General Steel Castings Corp., Eddystone, Pa.
Wheels and axle assemblies	Bethlehem Steel Co., Bethlehem, Pa.
Journal box assemblies	Fafnir Bearing Co., The, New Britain, Conn.
Coil springs	John Evans Sons, Philadelphia, Pa.
Elliptic springs	E. R. Merrill Spring Co., New York
Elliptic spring pads	Crown Cork & Seal Co., Baltimore, Md.
Couplers and yokes	American Steel Foundries, Chicago
Side bearing assemblies	A. Stucki Co., Pittsburgh, Pa.
Equalizer beams, cross bars and hangers	Camden Forge Co., Camden, N. J.
Body center plates	Treadwell Engineering Co., Easton, Pa.
Snubber side stems	Central Railway Supply Co., Chicago
Bolster rubbing pads	Goodyear Tire & Rubber Co., Inc., Akron, Ohio
Shock absorbers	Houde Engineering Corp., Buffalo, N. Y.
Brake shoes	American Brake Shoe & Foundry Co., New York
Buffer springs, Improved (Fowler)	Union Metal Products Co., Chicago
Flexible connections	Barco Mfg. Co., Chicago
King pin sets (10)	W. H. Miner, Inc., Chicago
Hinge assemblies	Stanley Works, The, New Britain, Conn.
Trap door locks and step operating mechanism	O. M. Edwards, Inc., The, Syracuse, N. Y.
Hooks and grab handles, White bronze	H. S. Getty & Co., Inc., Philadelphia, Pa.
Friction catches	Russell & Erwin Mfg. Co., New Britain, Conn.
Name plates, Acid etching and filling in letters	Etched Products Corp., Long Island City, N. Y.
Sash frames	Hunter Sash Co., Flushing, L. I., N. Y.
Air push window wipers	Hays Corporation, The, Michigan City, Ind.
Piano hinges	Homer D. Bronson Co., The, Beacon Falls, Conn.
Molding section	Dahlstrom Metallic Door Co., Jamestown, N. Y.
Extruded aluminum molding	Bohn Aluminum & Brass Corp., Detroit, Mich.
Complete kitchen and pantry equipment	Angelo Colonna, Philadelphia, Pa.
Dining chairs (24)	J. G. Furniture Co., New York
Lounge chairs (52)	Anton Graff Company, Philadelphia, Pa.
Lounge-chair cushions	Mishawaka Rubber & Woolen Co., Mishawaka, Ind.
Seats and tavern chairs	Heywood-Wakefield Co., Gardner, Mass.
Seat cushions and arm rests	Dunlop Tire & Rubber Corp., Buffalo, N. Y.
Upholstery	Shelton Looms, New York Massachusetts Mohair Plush Co., Boston, Mass. L. C. Chase & Co., Inc., New York
Leather, tavern and dining-room chairs	Lackawanna Leather Co., Hackettstown, N. J.
Mirrors (12)	Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Curved Masonite and tempered Presdwood	Masonite Corp., Chicago
Curtain material	Pantasote Co., Inc., The, New York
Carpet	L. C. Chase & Co., Inc., New York
Linotile flooring	Armstrong Cork Products Co., Lancaster, Pa.
Rubber carpet cushion and Protecto weatherstrip	Midgeley & Borrowdale, Chicago
Insulmat	I. W. Mortell Co., Kankakee, Ill.
Air brake equipment	Westinghouse Air Brake Co., Wilmerding, Pa.
Copper tubing and fittings	American Radiator Co., New York
Peacock end brakes	National Brake Co., Buffalo, N. Y.
Air-conditioning equipment	Airtemp, Inc., Detroit, Mich.
Compressor cog belt	Dayton Rubber Mfg. Co., Dayton, O.
Air-conditioning receptacles	Pyle-National Co., Chicago
Return air and fresh air filters; Viscosine coating oil for air filters	Air-Maze Corp., Cleveland, Ohio
Correlative temperature control	Vapor Car Heating Co., Inc., Chicago
Exhaust fans and blowers	B. F. Sturtevant Co., Inc., Hyde Park, Boston, Mass.
Grilles	Hart & Cooley Mfg. Co., Chicago
Grille cores	Tuttle & Bailey, Inc., New Britain, Conn.
Phister air pressure	Phister Mfg. Co., Cincinnati, Ohio
Batteries	Electric Storage Battery Co., Philadelphia, Pa.
Charging receptacles	Pyle-National Co., Chicago
Lighting equipment	Pyle-National Co., Chicago
Baggage-rack fixtures	Electric Service Supplies Co., Philadelphia, Pa.
Receptacles and jumper assemblies	Loeffelholz Co., Milwaukee, Wis.
Wire	Habirshaw Cable & Wire Corp., Yonkers, N. Y.
Annunciator, push buttons, door switches	Westinghouse Electric Supply Co., New York
Ceiling fixtures	Luminator Company, Chicago
Generators, regulators and relays	Safety Car Heating & Lighting Co., New York
Axle generator drive, D. R.	Safety Car Heating & Lighting Co., New York
V-belts for axle generator drive	Dayton Rubber Mfg. Co., Dayton, O.
Steam heat equipment	Vapor Car Heating Co., Inc., Chicago
Diaphragm assemblies, folding tail gates and roller hooks	Morton Mfg. Co., The, Chicago
Vestibule diaphragm curtain assemblies	Adams & Westlake Co., Chicago
Folding gate padlock	Yale & Towne Mfg. Co., Stamford, Conn.
Door closers	Norton Lasier Co., Chicago
Flameproof muslin and Stonefelt	Johns-Manville Corporation, New York
Sanitary water coolers	Henry Giessel Company, Chicago
Cup dispensers	U. S. Envelope Co., Logan Drinking Cup. Co. Div., Worcester, Mass.
Lavatories	Crane Co., Chicago
Four drop seats	Dayton Mfg. Co., Dayton, Ohio
Hoppers	Duner Co., Chicago
Paper towel dispensers and tissue	Scott Paper Co., Chester, Pa.
Toilet paper holders	A. P. W. Paper Co., Albany, N. Y.
Soap dispensers	West Disinfecting Co., Long Island City, N. Y.
Polished plate glass and safety glass	Safetee Glass Co., Philadelphia, Pa.
Fire extinguishers and mounting brackets	Pyrene Mfg. Co., Newark, N. J.
Lubricating oil	Texas Company, The, New York
Paint material for interior	E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

The Schedule

When the new streamline train goes into regular service on December 13 it will make two round trips daily, except Sundays, between the Reading Terminal, Philadelphia, and New York. One trip in each direction will be made on a schedule of 1 hr. 45 min. between the

(*Continued on page 839*)

Leaders Scan Railroad Problems

Public obligation to render carriers relief stressed in messages sent N. Y. Railroad Club by national figures

THAT national leaders in industrial and public pursuits hold the problems of the railroads to be of tremendous importance and that they have given serious consideration to the solution of those problems is evidenced by the messages received by the 3,000 members and guests of the New York Railroad Club gathered at its sixty-fifth annual dinner in the Hotel Commodore, New York, on the evening of December 9. Bound together in an illustrated brochure for distribution among the persons attending the dinner and interested parties throughout the country, the messages comprise a symposium which has been titled "What the Public Thinks of Railroad Problems."

Their significance to the future of the industry is commented upon in a foreword by Charles A. Gill, president of the club and general manager of the Reading and Central of New Jersey, who expresses appreciation that "prominent and busy men in various fields of endeavor entirely outside the railway and railway supply interests, have generously taken the time to place before us the constructive and helpful suggestions in the following pages."

Col. Leonard P. Ayres, noted economist and vice-president, Cleveland Trust Company, urged railroad recovery as the key factor in the country's prosperity. Reducing statistics to a common denominator, he pointed out that, at present prices, the values of railroad securities are equal to 20 per cent of the total values of all our listed corporation stocks and bonds; that the railroads purchase 20 per cent of our bituminous coal, 20 per cent of our fuel oil, 20 per cent of our total output of lumber and 20 per cent of our iron and steel. The transportation industry, he added, contributes more to the national income than does agriculture, and the railroads play by far the largest part in transportation. In conclusion, he expressed the opinion that "railroad prosperity is an essential component of national prosperity."

Hon. Bruce Barton, recently-elected member of Congress from New York and nationally-known author and advertising executive, was especially concerned with "taking the railroads out of the poor house," letting fall the reminder that nearly 100 constituent companies and 28.1 per cent of total rail mileage are in the hands of receivers or trustees. When it is realized that this condition is due in a measure to harmful governmental policies, "it is time to 'Stop, Look and Listen'," Mr. Barton averred, expressing further the opinion that government has been "monkeying" with the carriers to a greater extent than with other business. And while he declared that sound regulation must continue, the writer insisted that "at least the players are entitled to their board and an occasional change of socks and underwear."

James Ford Bell, chairman, General Mills, Inc., Minneapolis, Minn., submitted a message concerned mainly with the shippers' obligation to take unto themselves the present plight of the railroads. Reminding shippers that they must choose between adequate rate increases and the alternative,—government ownership—he urged industry, for its own preservation, if for nothing else, to join with the roads in their efforts to secure increased revenues, and with the least possible delay. "Bread, in the form of higher freight charges, cast upon the waters may yet return to us in the form of rate reductions and lower freight costs," Mr. Bell declared.

Ralph E. Flanders, president, Jones & Lamson Machine Company, Springfield, Vt., stressed the dependence of small and moderate-sized industries, serving wide regions, upon the facilities offered by the railroads. Pointing out that this group constitutes the greater portion of the nation's business, Mr. Flanders argued that good railroad service is essential for the active operation and full service of such industries, which are too small to maintain the private highway or barge transportation systems of great corporations and too wide in raw material needs and markets to "get along" with truck services.

The service rendered small industries by the railroads has steadily improved, it was maintained, and no one has a greater interest in the relief of the carriers than these industries themselves.

C. M. Chester, chairman, General Foods Corporation, discussed the subject "Do We Want Government Ownership?" and, after presenting comparisons of conditions arising from government ownership as contrasted with the services and costs attending private operation as we experience it, concluded that government control would bring political manipulation, deficits and loss of taxes. The last point Mr. Chester emphasized, summarizing the uses to which the large railroad tax payments are devoted, including the subsidization of competitors of the rail carriers. The railroads themselves, he maintained, have received but little assistance and, in the main excessive regulation.

In conclusion, Mr. Chester asked for the elimination of unfair competition and "sympathetic" co-operation from all legislative and administrative bodies.

Myron C. Taylor, chairman, United States Steel Corporation, devoted his discussion to the railroad spending which would follow financial health. Such spending, he declared, "would be an important factor in turning the trend of business back upon a course of prosperity." And while he singled out the steel and allied industries as those most dependent upon railroad purchasing, Mr. Taylor broadened his interpretation to include employment, government income and industry in general, stating that since "the railroads consume substantial quantities of nearly everything that is mined, grown or manufactured" in the country, "it is vital to the economic welfare of every American that they should be prosperous."

Glenn Griswold, vice-president and publisher of "Business Week," in replying to "What the Public Thinks of Railroad Problems," stated that the public, generally speaking, does not think at all about them and that herein lies the principal weakness of our transportation set-up, which he chose to characterize as the "confused relations between the railroad, the public and governing bodies." Actually, as he pointed out, the railroad group is forced, indirectly, to subsidize other industries "by giving its fat and lifeblood in order to maintain motion without assuring life."

Shifting to competitive forms of transportation, Mr.

Griswold placed himself on record as advocating the establishment of co-ordinated transport system by the railroads themselves, which "should have long ago ceased to think of themselves as railroad companies but should have been providing transportation by rail, water, air and highway." As his final point, he maintained that the shipper must realize he has as much interest in the carriers' health as the latters' security holders.

Hon. Clarence F. Lea, member of Congress from California and chairman of the interstate commerce committee of the House of Representatives, outlined a path for government to follow in its regulation of business, distinguishing between corrupt and oppressive business practices and legitimate management. He further laid on the federal government the task of "preserving a just, economic balance" between competitive transportation facilities and of eliminating cut-throat transport undertakings not based on economic merit.

As a specific remedy for the railroad's ills, Mr. Lea advocated the repeal of the undistributed profits tax, which move he characterized as a "slight" step toward relief and "a positive act to signify the disposition of Congress to aid business recovery."

A. A. Potter, dean of engineering, Purdue University, and president, American Engineering Council, reviewed the progress made in rail transport through the research carried on by both the equipment industry and the carriers themselves. This research, he recalled, has been carried on "continuously" in spite of difficult financial conditions. He prophesied great improvements in steam locomotives, especially emphasizing weight reduction, increase in thermal efficiency and use of preheated air.

Grover A. Whalen, president of the 1939 New York World's Fair, declared that the success of the 1939 fair will depend in great measure upon the support which the roads are affording it in the rental of exhibit space and in furnishing transport facilities for building materials. The carriers' part in transporting the public to New York and the fair grounds was also pointed out.

General Malin Craig, chief of staff, U. S. War Department, discussed the important role of the railroads in national defense, explaining that army mobilization plans are based upon continued operation of the roads by existing organizations. Recalling that the American carriers "are accustomed to meet sudden and extreme demands," General Craig expressed reliance on their ability to meet the requirements of mobilization.

Charles A. Gill, president of the club, presided at the dinner. Those members heading committees in charge of preparations were: Samuel MacClurkan, vice-president, American Arch Company, general chairman; Frank H. Becherer, assistant superintendent motive power and rolling equipment, Central of New Jersey, vice-general chairman; C. C. Warne, purchasing agent, New York Central, vice-general chairman; Charles E. Smith, vice-president, New Haven, chairman of the advisory committee; H. I. Dunphy, American Car & Foundry Co., chairman of the attendance committee; J. S. Henry, Safety Car Heating & Lighting Co., chairman of the dinner committee; B. L. Norton, Scullin Steel Company, chairman of the entertainment committee; Frank Hedley, president, Interborough Rapid Transit, chairman of the reception committee; Roy V. Wright, managing editor of *Railway Age* and vice-president and secretary of Simmons-Boardman Publishing Corporation, chairman of the publicity committee; Clarence C. Fletcher, New York Central, chairman of the seating committee; Samuel F. Pryor, Jr., Southern Wheel division, American Brake Shoe & Foundry Co., chairman of the out-of-town committee.

Rail Joint Tests Now in Progress

RAIL laying has been completed on two test sections aggregating 15 miles of track that have been set aside for the conduct of an investigation of rail joints under the direction of A. N. Talbot, professor emeritus of the University of Illinois, for the Committee on Rail of the American Railway Engineering Association. One of these sections embraces nine miles of westbound main track of the Atchison, Topeka & Santa Fe between Ancona, Ill., and Toluca, and the other comprises six miles of the eastbound main track of the Pennsylvania, between Valparaiso, Ind., and Wanatah.

Running Up the Nuts at a Joint in the Santa Fe Installation

The test track on the Santa Fe, which carries between 9 and 10 million gross tons annually, is laid with 112-lb. rail that is controlled-cooled in the north rail and normalized, end-hardened and beveled in the south rail. It is divided into nine sections, each a mile in length and each of which is equipped with joints that differ in one or more respects from those in the other sections. Five of these sections have A.R.E.A. standard joint bars as follows:

1. Full-bearing, four-hole
2. Full-bearing, six-hole
3. Controlled-bearing, head and base, four-hole
4. Controlled-bearing, head and base, six-hole
5. Controlled-bearing, head only, four-hole

Oiling the Rails Before Applying the Joint Bars

(*Continued on page 846*)

Efficiency of Crossing Protection*

An extensive study of the human and mechanical factors involved in accidents at railway-highway intersections

By Warren Henry

Assistant Chief Engineer, Illinois Commerce Commission, Springfield, Ill.

Typical Flashing-Light Crossing Signal

APPARATUS for protecting railroad-highway crossings has been developed to a high degree of mechanical reliability but, to be effective in preventing accidents, the devices must work in conjunction with human reaction. Therefore, in any study of the promotion of safety at crossings it is necessary to consider the human as well as the mechanical aspects.

In discussing crossing accidents, most people are likely to attribute the causes to two types of drivers, (1) those who deliberately disregard warning indications, and (2) those inattentive drivers whose minds are concentrated on other matters. Accidents attributable to other causes, however, are happening all the time and our problem is by no means as simple as would appear if we had to deal only with the two conditions mentioned above.

Reckless Driver a Hazard to Other Persons

Considering for a moment the accidents caused by reckless and inattentive drivers, an argument is sometimes advanced that the misfortunes of these drivers are attributable to the drivers themselves, and that neither public authorities nor the railroad should be particularly concerned with the prevention of such disasters. On the contrary, the prevention of accidents at crossings is not merely a matter of protecting an individual driver who may himself be at fault, but is clearly a matter of public interest and public safety, because, not infrequently, such accidents cause trains to be derailed. For illustration, a coupe driven by a woman was struck by a passenger train at a crossing, causing the locomotive and the leading cars to be derailed and killing not only the automobile driver, but also three men on the locomotive and two persons in other parts of the train, while many others were injured, and property damage of about $100,000 was incurred.

Other Factors Involved

Consideration should now be given to accidents in which the driver cannot be criticized for being reckless or inattentive, but in which the misjudgment of conditions or failures of a human or mechanical nature were involved. In some instances, evidence indicates that a driver simply misjudged his own speed and requisite stopping distance and, while knowing of the hazard and doing his best to stop, he found himself nevertheless unable to make a stop in the distance which he has allowed. Another common case is that of the night driver who outdrives his headlights, that is, he is unable to stop in the space available after he discovers, by his headlights, a dark train across the road ahead. Before we condemn this driver too much, let me say that tests conducted by our state highway department tend to indicate that many of us are inclined to be guilty rather habitually of this fault of outdriving our headlights.

Again, as illustrating human failures, let us consider this type of accident: A man, age 73, was driving alone in his car and was approaching a crossing when a train was observed to be also approaching. According to witnesses, the driver of the car evidently saw the approaching train but his actions were such as to indicate that he became confused and in the end, he stalled his automobile directly on the crossing, with the result that he was killed. This was not a case of recklessness or of inattention, but was rather one of the not-uncommon situations of confusion or panic which result in an accident.

We may also classify, to some extent at least, as human failure the type known as the two-train accident. The most usual form of this arises where a driver awaits the passage of one train at the crossing of a multiple track railroad, and, immediately upon the passage of that train, drives forward into the path of a second train approaching upon another track concealed from view by the first train.

The human failures, therefore, may be summed up as including, as major factors, recklessness or intoxication, inattention, misjudging of distance and speed, outdriving headlights, confusion or panic, failure to appreciate a possible two-train situation, and failure, on the part of an employee, to perform his duty. Physical conditions such as storms, ice or snow on the pavement, frost on the windshield, dazzling headlights of other cars, sharp approach grades, obstruction to view, and the like, are also clearly major factors in many accidents.

Distribution of Accidents

Accidents are not, for the most part, concentrated at a few important and heavily traveled crossings. A large percentage are spread out over the numerous country road crossings, crossings of city and village streets, and other crossings not on the main roads of travel. A study was made of accidents reported to the Illinois Commerce

* An abstract of a paper presented before the Western Society of Engineers, Chicago, on November 29.

Commission by the Illinois Central, covering a period of five years from 1929 to 1935, inclusive. On 1,809 miles of lines covered by this survey, there were 2,910 crossings, or an average of one crossing for each 0.6 mile of line. During the five-year period, 549 reportable accidents occurred and these were distributed among 376 crossings. Designating these 376 as "accident crossings," we found that 89 per cent of them had no more than one or two reportable accidents in the seven years, 10 per cent had three to five accidents each, and only 1 percent had more than five reportable accidents. In other words, nearly 90 per cent of the accident crossings were the scene of casual and infrequent accidents, and, conversely, the accidents themselves were for the most part distributed among crossings which individually would not be deemed to be points of very great hazard, upon the accident record at least.

The cost of grade separations varies greatly, but will average approximately $50,000 per crossing. Grade separation projects to eliminate all of the 18,000 crossings in Illinois would be a manifest impossibility within any reasonable length of time because a total expenditure of some $900,000,000 would be required. If all of the crossings in this state were to be protected by automatic flashing-light signals or some comparable means, we would still contemplate a total expenditure of about $45,000,000. Bear in mind that many of these crossings are on country roads and village streets which carry light traffic but nevertheless, in the aggregate, can be depended upon to produce a large portion of our total number of crossing accidents.

Protection of Minor Crossings

This suggests the problem of developing protective methods, means, apparatus, or traffic control measures, suitable to these numerous so-called minor crossings, and which will actually work in practice. Someone may suggest the use of stop signs or stop regulations as an obvious measure. In theory this is good, but past experience with such measures in this and other states is not encouraging. Plain common sense, on the part of the public, might appear to be a sufficient answer. But, as a safety measure, supposed common sense is a most dubious thing upon which to rely. We deal with human beings, and it is no answer to wish, or suppose, or expect that human nature is different than it actually is. The problem of these minor crossings has been given careful study by various organizations, including the staff of the Illinois Commerce Commission. Tangible results appear to have been achieved to a greater extent in the mechanical than in the human aspect, particularly in the improvements in the marking signs.

At several hundred crossings in Illinois, fixed crossbuck signs of an improved type have been installed. The outstanding feature is the use of reflector buttons in both the front and the rear faces of the sign. The so-called rear indication has several advantages. A driver approaching the crossing at night sees two illuminated crossbuck symbols, one on each side of the highway. This gives a sort of "gateway" effect which tends to accentuate the place on the highway thus marked. Furthermore, the view of the sign on the right-hand side of the road is frequently obstructed at a critical time by such a thing as a truck ahead, and in that case the rear indication of the sign on the left may be in view. In the situation of a dark train across the road, the rear indication provides two possible aids in detecting its presence early. A driver who knows the situation may readily conclude that if he sees only the sign on his right, something is between him and the sign on the left, the latter sign being on the far side of the tracks. On a right angle crossing moreover, the rear reflector buttons on the far sign will flash intermittently between railroad cars as a dark train is passing over the crossing. This sign is made with a 50-deg. angle between blades, instead of a 90-deg. angle as often employed in reflector signs. The reason is that the 90-deg. sign is regarded as standard for use in connection with signals, and at night the driver should be apprised of the fact that he is approaching a fixed sign, not a signal.

Driver's Obedience to Signals

Passing now to the more important crossings protected by automatic signals or other visual protection, it may be interesting to review some studies made with a view to determining how effective such signals are, without special enforcement, in restraining drivers from going upon the crossing when a train is actually approaching.

Studies were made at a crossing at South Grand avenue with the Alton in Springfield, at intervals from March, 1936, until December, 1936. Five series of observations were conducted, each involving a record of the highway traffic during the passage of 67 trains over the crossing, a total of 335 trains.

The record shows the actions of the drivers of 1,688 highway vehicles who came up to the crossing while the flashing-light signals were giving warning of the approach of a train. Observers were located in a gasoline station near the crossing. An observer would start a stop watch when the signal began to flash on the approach of a train, and, as each highway vehicle came to the crossing, there would be recorded on the chart the time of its arrival with reference to the starting of the signal and whether the car stopped and waited, stopped and passed over the crossing, slowed down and passed over, or passed over with neither stop nor slow-down. In plotting the field notes the charts were reversed, that is, the time of arrival and the actions of the drivers were recorded with reference to the time of arrival of the train. Classifying with the "safe" or stop-and-stay drivers, those who arrived within three seconds or less after the signals began flashing, the figures are as shown in Table I.

Table I

	Number	Per cent
Total cars	1,688	100.0
Stop and stay	1,422	84.2
Slow and pass	59	3.5
Stop and pass	72	4.3
Pass	135	8.0

The drivers apparently were very much influenced by the actual proximity of the train when they arrived at the crossing. Table II shows separately the actions of the drivers whose cars arrived at the crossing in each five-second interval from the time of passage of the train back to 20 sec. prior thereto, and also as a group, all those who arrived more than 20 sec. prior to the train.

Only 51 per cent of those who arrived 20 sec. or more prior to the arrival of the train, stopped and waited for the train, although the signal was showing a danger indication. The percentage of "stop and stay" drivers, however, increased progressively in each of the succeeding five-second intervals up to the arrival of the train at the crossing, these figures being 64.9, 84.9, 92.5 and 98.4 per cent, respectively. Bearing in mind that the signal was flashing and commanded a stop just as much in one of these intervals as in another, it is obvious that

a large number of the drivers were being guided by their estimate of their chances of getting over the crossing in advance of the train, rather than by the command of the crossing signal. The signal, therefore, seems to be regarded by a large percentage of the drivers as merely conveying information, and not as a mandatory requirement to stop. In this connection, the Illinois statutes require a driver, under penalties, to stop when such a signal is giving a warning and not to proceed until it is safe to do so.

Table II

Actions of Drivers, Analyzed by 5-Second Intervals

Interval 0 to 5 seconds prior to arrival of trains	Number	Per cent
Total cars arrived in that interval	428	100.0
Stop and stay	421	98.4
Slow and pass	1	0.2
Stop and pass	0	0.0
Pass	6	1.4
Interval 5½ to 10 seconds prior to arrival of trains		
Total cars arrived in that interval	492	100.0
Stop and stay	455	92.5
Slow and pass	7	1.4
Stop and pass	6	1.2
Pass	24	4.9
Interval 10½ to 15 seconds prior to arrival of trains		
Total cars arrived in that interval	378	100.0
Stop and stay	321	84.9
Slow and pass	10	2.6
Stop and pass	12	3.2
Pass	35	9.3
Interval 15½ to 20 seconds prior to arrival of trains		
Total cars arrived in that interval	190	100.0
Stop and stay	123	64.9
Slow and pass	9	4.7
Stop and pass	24	12.6
Pass	34	17.8
Interval 20½ seconds or more prior to arrival of trains		
Total cars arrived in that interval	200	100.0
Stop and stay	102	51.0
Slow and pass	32	16.0
Stop and pass	30	15.0
Pass	36	18.0

Signals Not Self-Enforcing

I emphasize that, at least insofar as this group of drivers may be regarded as representative, the signals at a railroad crossing do not appear to be self-enforcing, that is, the mere information of the approach of a train given by the signal, coupled with the supposed common sense of the drivers, is not sufficient to deter a considerable number of drivers from taking a chance. The danger of being killed or injured in a crossing crash does not seem to be of itself a sufficient deterrent.

Table III shows a combination of the two five-second intervals immediately prior to the passage of the train, in other words, the actions of all of the drivers who arrived at the crossing while the train was, in time, 10 sec. or less away. Clearly the hazard at such a time is very real, but notwithstanding that the train was actually so close, about five per cent still elected to take a chance. Of these, 3.3 per cent passed over the crossing without a stop or without apparent slow-down. More remarkable, however, was the mental attitude of the six drivers who, in such a situation, stopped their cars and then actually started again and passed over the crossing.

Referring back to Table II with respect to the five seconds prior to the passage of the train, a period in which there certainly can be no question of the great imminence of the danger, almost 2 per cent of the drivers still chose to take a chance. That means that approximately two vehicles out of each 100 are operated by drivers who appear to be willing to pass over a grade crossing in the face of a warning signal and five seconds or less ahead of the approaching train. This percentage of what we may call undoubtedly unsafe drivers is more than sufficient to account for all of the crossing accidents.

If this study reflects anything like representative conditions, we cannot rely upon a considerable percentage (fortunately a minority) of the automobile drivers controlling their vehicles safely at railroad crossings upon the giving of a merely informational warning. It is obvious that if our crossing signals are to protect the crossings efficiently, there must be some compulsion or some deterrent to crossing in the face of a danger indication, other than the hazard of the approaching train itself.

Let me repeat that this apparent readiness to incur an unwarranted hazard is not the private affair of the minority who show that readiness. Every driver who takes such a chance imperils the train crew and passengers, other users of the highway who may be close to the point of possible impact, as well as other occupants, if any, of his own car. In a public safety study we cannot dismiss it, with a shrug of the shoulder, as a foolish act which carries its own penalty. The penalty too often falls upon others. It is a matter of public safety, not of private or personal behavior. These then, the reaction of the highway user to a warning of danger, and the problems of bringing about in some effective manner a compulsory observance and compliance, seem to be the chief factors from the human side in making crossing protective systems more effective and reducing the number of crossing accidents.

Human Factors of Protection

Let us examine our protective systems from the mechanical viewpoint, and with some regard to co-ordination with human factors. All of our protective systems depend upon the perception of the eye or the ear of drivers of vehicles. Even the so-called firm barrier types (of which we have none in Illinois) which attempt to stop a vehicle physically, actually depend upon the eye and ear to prevent accidents, at the barrier if not at the train. There is, however, this natural classification that, in some types, the warning may be either disregarded or overlooked and the driver pass over the crossing without having the warning brought home to him, while in others he may not pass over the crossing without either breaking or driving around a barrier arm which wholly or partly obstructs his path. These, for convenience, we may call the visual and audible types on the one hand, and the barrier types on the other.

Table III

Actions of Drivers Arriving With Train 10 Seconds or Less Away

	Number	Per cent
Total cars arrived in interval	920	100.0
Stop and stay	876	95.1
Slow and pass	8	0.9
Stop and pass	6	0.7
Pass	30	3.3

The visual and audible types include: 1, Fixed signs; 2, flashing-light signals; 3, wig-wag signals; 4, crossing watchmen; 5, flood-lighting, and 6, the locomotive whistle and bell. The only barrier types in general use involve the use of some sort of a gate, either manually-operated or automatic.

It is a mistake to assume that either one of these general types is necessarily superior to the other. Crossing protective systems are in a sense, tailor-made; that is, while certain standards of aspect and mechanism are used, the system of control, as well as the type of protection chosen, must be adaptable for the particular con-

ditions that prevail at each crossing. For example, the automatic flashing-light signal is probably at a distinct advantage, compared with barrier types, in the certainty of its operation, because the signal has practically no moving parts. I know of no record of an accident, in this state, where such a signal, of the present standard design, failed to operate when it should have operated. Thus, over automatic barrier types it presents the advantage of mechanical and electrical simplicity, and over manually-operated barrier types, the advantage of eliminating human failure in operation, a most important point. On the other hand, the reckless or drunken driver can pass without penalty, whereas a gate would probably break his headlights or windshield. Moreover, a properly lighted barrier is much less likely to be overlooked, and certainly the barrier type is more effective in the two-train situation. Other points may be mentioned, but this will indicate that as between these two general types, it is not a one-sided question. In Illinois the trend for several years has been strongly toward the flashing-light signal as the predominant type. Of late, however, there is an increased tendency to make use of the improved barrier types in situations where they are suitable.

So-called "false indications," that is the operation of the signal when no train is on or about to occupy the crossing, are undesirable, but to some extent cannot reasonably be avoided. The statute states the proper rule of conduct in such cases—the driver shall stop and shall not proceed until it is safe to do so. In other words, the signal should act in that case much like a stop sign at an entrance to a through street. It commands a stop, but having stopped, the driver, if he ascertains the way to be clear, may proceed. Unfortunately, people are rather prone to assume too hastily that any train or engine in the vicinity is causing the signals to work, and fail either to stop or to ascertain that the way is clear.

This suggests one of the situations in which many accidents do happen with these types of signals, namely, the two-train situation. The signal does given a warning of the second train by the continued operation after the first train has passed, but that does not seem to be effective. The improved types of sirens and audible warning devices carried by the newer locomotives, are crossing protective equipment, and it may be that there is a practical field for improvement in the further study of these, especially in relation to human reaction.

Crossing Watchmen

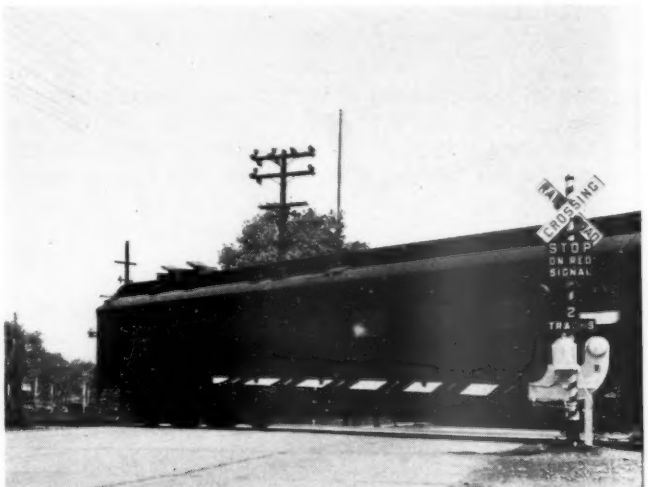
Improvement in efficiency is much needed in the use of crossing watchmen, which is a form of visual and audible protection. The advantage of this type of protection is in its flexibility, the ease with which watchmen can be shifted about and can be used in part-time service. The watchman, however, can be in but one place at a time, he can guard but one side of a train when it is on the crossings, he is not an object of high visibility when mingled in traffic, and his hand lantern does not compare in power and brilliancy with the lighting provided on modern signals. Often he performs his duties with considerable danger to himself; in fact, there have been many casualties to watchmen on duty.

Some progress has been made by developing a suitable reflector type sign which will soon be installed at all crossings in this state where part-time watchman protection is maintained. These signs display prominently the words, "Watchman Off Duty" when the man is off, and conceal that message when he is on duty. A similar sign is provided for crossings where gates are operated part time, this reading "Gates Not Working." A type of visual protection which seems to be very effective for some special situations is directional floodlighting. This is not to be confused with open lights which produce a glare in the eyes of both highway users and locomotive enginemen.

Consideration of Gates

Leaving the purely visual and audible types, let us consider briefly the barrier type or the various forms of gates, manually-operated or automatic. The strongest points of this type of protection seem to be these: First, it places its warning directly in the path of oncoming traffic, and if properly lighted and operated, it is far less likely to be overlooked than a signal to the side of the road. Second, it carries some compulsion. A driver, unless he stops, must crash it or drive around it. In the latter case he necessarily slows down and recognizes the warning, in the former case he risks damage to his car. Third, it holds back traffic in the two-train situation.

The disadvantages are, mainly: First, there are more mechanical parts and possibility of mechanical failure. Second, the element of human failure, of gate operators, or of irregular operation is always present in the manually-operated types. Third, in the automatic types, the control circuits become more elaborate and complicated, for many situations at least. This is mainly because the gate cannot, like the signal, function reasonably as a



Automatically Controlled Short-Arm Gate in Addition to Flashing-Light Signals

"stop and proceed" indication, and the operation of the gate must not unduly obstruct the highway.

One recent trend, in both manual and automatic types, is the use of the short arm, that is, an arm which only obstructs the traffic lanes on the right-hand side of the center of the highway and does not obstruct those on the left. Many of these are in use, and experience seems to show that there are practically no accidents caused by cars driving around the ends of the arms. On the other hand, the danger of trapping cars between gates is eliminated and with this comes another important improvement, more regular and timely operation of the arms. No doubt there are places where full coverage of the street is advantageous, but there is a tendency to make more use of the short arm, for vehicles at least. A type of short arm automatic gate combined with flashing-light signals seems to be giving good service in this state. The advantage of combining the signal with the gate is that if the arm is broken, the crossing is still protected

by the signals. It may be mentioned that the combination of flashing-light signals with a gate arm is not, as I understand it, a patentable combination and any manufacturer can make use of this combination of standard units.

We may sum up the situation, therefore, with reference to the present status of the barrier type protection by saying that there seems to be an increasing tendency to make more use of the more up-to-date forms of this protection, with emphasis on the short arm gate either manually or automatically operated, and upon the combined use of a barrier arm with flashing-light signals. The more extended use of automatic gates, however, will probably entail the development and use of selective control circuits, that is, those which distinguish between fast and slow trains, as well as provision for switching and other conditions which might cause lengthy obstruction of the highway. The excellent record of the automatic gates is such as to warrant further trial of these types with a view to developing their proper place in the general scheme of crossing protection.

The Pedestrian Problem

The pedestrian accidents at railroad crossings are far less numerous than those involving vehicles. For example, in the year 1936, out of a total of 721 persons killed or injured at grade crossings in Illinois, only 46 were pedestrians. One of the chief points of hazard for pedestrians is suburban stops, where the tendency of commuters is to swarm around the rear end or the forward end of the train, and get in the way of another train. This seems to be actually more of a police problem than an engineering problem. Occasionally a pedestrian ducks under the lowered gate and it is difficult to suggest anything more than a police solution for this situation. Several pedestrian fatalities have occurred, apparently as the result of pre-occupation of the victim, in that he walked into the path of a train despite the warning of a signal or flagman. Here the sidewalk gate arm certainly appears to have merit.

In some instances the protection of children is presented as the chief purpose of crossing protective systems. This attitude finds very little support in the cold facts, so far as the child pedestrian is concerned. An accident to a child is peculiarly regrettable and usually arouses a shocked public sentiment, but nevertheless, as a statistical fact, children as pedestrians are rarely struck by railroad trains. This, unfortunately, does not apply to a child on a bicycle. A bicyclist should not be classed as a pedestrian for this purpose, as is sometimes done. If a suggestion is to be made concerning the special safety of children, it would be to concentrate upon the child bicyclist. In this connection, also, it might be observed that the average crossing watchman is far less efficient in controlling children than he is sometimes assumed to be.

Summary of Conclusions

To summarize our entire discussion, therefore, let us observe that accidents at railroad crossings result from either human or mechanical factors, or a combination of the two, but where mechanical factors are involved, they nearly always also involve human factors. In a study of the situation, therefore, it is necessary to place considerable emphasis upon the human factors. The distribution of accidents is such that we have a real problem of protecting the minor or little-used crossings in some better way, either by traffic control or mechanical means, and, while these minor crossings in the aggregate supply a large part of our accidents, the problem of their treatment has not been solved. At the crossings specially protected, the human factor is of great importance since it appears that mere sense of danger from the train itself is not a sufficient incentive or compulsion to restrain a considerable number of the highway users from incurring undue hazard.

The visual and audible types of protection are highly developed and of great mechanical reliability and if the human element could be controlled better, they would be of much greater efficiency. The barrier types of protection have important advantages in that, among other things, they introduce a certain degree of automatic compulsion, but on the other hand, their use often entails drawbacks in the way of introducing human factors of failure of apparatus or operation, additional risk of mechanical failure and complication of control systems. The problem of the child pedestrian is one that is usually greatly over-estimated, at least from a numerical standpoint, but the child bicyclist is a problem of about the same sort as the drivers of vehicles in general. Rapid progress has been made in the last four or five years in the field of crossing protection but further progress is necessary before we can expect the same degree of safety at railroad crossings as we have in other phases of railroad operation.

Reading Receives Lightweight Streamline Train

(*Continued from page 832*)

Reading Terminal at Philadelphia and Liberty Street, New York, with three intermediate stops. On this schedule the running time of the train for the 90.2 miles between the Reading Terminal at Philadelphia and the Central Railroad of New Jersey Terminal at Jersey City is 1 hr. 33 min. The other trip in each direction will be made in 1 hr. 50 min., with six intermediate stops, a time of 1 hr. 38 min. for the 90.2-mile train trip.

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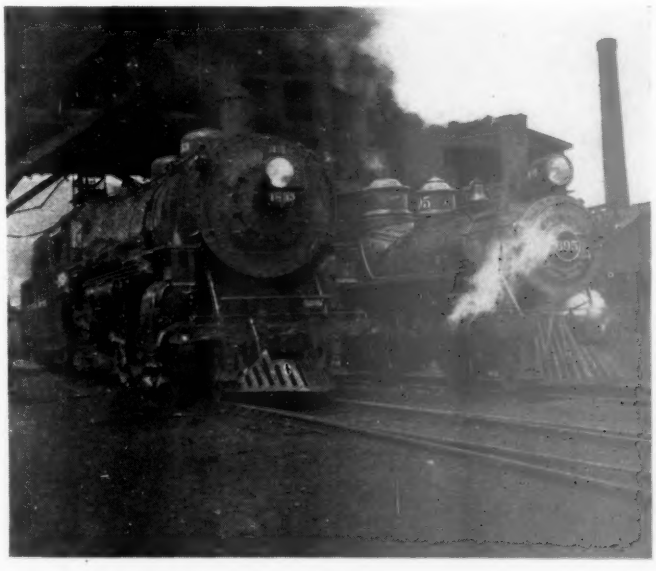


Photo by R. V. Nixon

Old and New on the Northern Pacific

Less Buying in September Cuts Nine Months' Gains

FURTHER narrowing of the margin between railway buying in 1937 and 1936 is shown by figures which have been compiled by the *Railway Age* for September and the first nine months of the year. Records of materials purchased, as received from 81 companies operating 89 per ce t of the total mileage, and this paper's own records of equipment ordered, show that the purchases by the Class I roads in September totaled approximately $81,452,000, including $55,605,000 of materials and supplies, exclusive of fuel, received from manufacturers, and approximately $3,687,000 of new equipment ordered from manufacturers, or a total of $59,292,000 from manufacturers, together with $22,160,000 of fuel. In dollars, this was a decline from August of about $9,000,000, or 10 per cent, in total purchases, and a decline of about $10,000,000, or 14 per cent, in the purchases of materials and equipment from manufacturers. The September totals show a recession in the buying of materials and supplies since June and a smaller dollar volume of buying of materials and equipment than in any previous month this year.

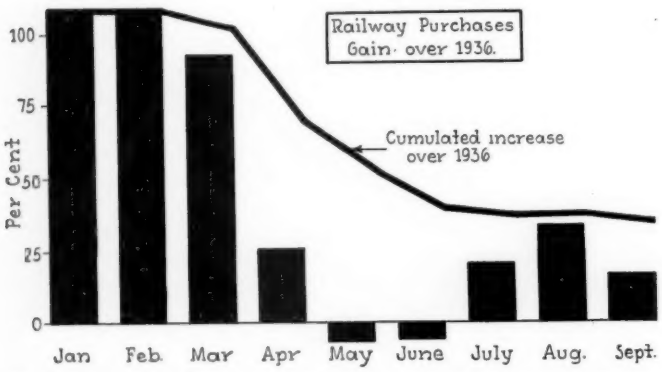


Chart Showing the Increase or Decrease in Each Month's Purchases Over the Corresponding Months in 1936 and the Trend of the Accumulated Total Per Month As Compared with 1936

Purchases of Material, Exclusive of Equipment—9 Months*

1937	Fuel (000)	Rail (000)	Cross-ties (000)	Other material (000)	Total (000)	Total less fuel (000)
January	$26,032	$3,154	$3,898	$46,536	$79,620	$53,588
February	26,160	3,891	3,389	45,068	78,508	52,348
March	30,505	6,275	4,999	55,646	97,425	66,920
April	19,632	5,386	5,132	56,166	86,316	66,684
May	20,473	5,043	5,026	53,968	84,510	64,037
June	22,426	5,804	6,035	54,422	88,687	66,261
July	21,858	3,840	5,701	54,760	86,159	64,301
August	21,221	2,807	5,989	52,788	82,805	61,584
September	22,160	2,742	5,643	47,220	77,765	55,605
9 Months	210,467	38,942	45,812	466,574	761,795	551,328
1936						
January	$21,859	$1,107	$3,027	$29,656	$55,649	$33,790
February	24,355	2,426	2,371	29,146	58,298	33,943
March	22,304	4,208	3,312	36,611	66,435	44,131
April	20,626	5,504	3,867	39,553	69,550	48,924
May	19,447	5,700	4,112	41,859	71,118	51,671
June	19,368	3,836	4,150	38,194	65,548	46,180
July	20,086	1,879	4,137	38,882	64,984	44,898
August	20,281	1,911	4,110	38,660	64,962	44,681
September	21,323	2,334	4,004	41,390	69,051	47,728
9 Months	189,649	28,905	33,090	333,951	585,595	395,946

* Subject to revision.

The September figures were still 17 per cent larger than those for September, 1936, but the gain over the previous year was less than in August when buying from manufacturers was 34 per cent greater than in August, 1936, and it was much less than in January and February when purchases were over 100 per cent above the corresponding volume of buying in 1936. On a quarterly basis, purchases of material and equipment, exclusive of fuel, from manufacturers in the first three months of 1937 were 104 per cent above the first quarter buying in 1936, while the corresponding purchases in the third quarter of 1937 were only 24 per cent above the third quarter of 1936.

Supplies and Equipment from Manufacturers

	1936 (000)	1937 (000)	Per Cent Increase: Months	Per Cent Increase: Accumulative
January	$37,439	$80,040	114	..
1 month	37,439	80,040	..	114
February	40,498	84,068	108	..
2 months	77,937	164,108	..	110
March	46,804	90,490	93	..
3 months	124,741	254,598	..	104
April	72,679	91,434	26	..
4 months	197,420	346,032	..	75
May	73,346	68,975	–6	..
5 months	270,766	415,007	..	53
June	71,764	68,486	–5	..
6 months	342,530	483,493	..	41
July	53,095	65,066	22	..
7 months	395,625	548,559	..	39
August	51,789	69,244	34	..
8 months	447,414	617,803	..	38
September	50,695	59,292	17	..
9 months	498,109	677,095	..	36
First quarter	124,741	254,598	..	104
Second quarter	217,789	228,895	..	5
Third quarter	155,578	193,602	..	24

Subject to revision, the purchases by the Class I railroads for the entire nine months of this year totaled approximately $551,328,000 for materials and supplies, exclusive of fuel, $125,767,000 for new equipment ordered from builders, and $210,465,000 for fuel—a total of $677,095,000 for materials and equipment, exclusive of fuel, from manufacturers, and a total including fuel of $887,563,000. The nine months' total was a 40 per cent increase over the first nine months of 1936 in the buying of materials and supplies, exclusive of fuel, a 23 per cent increase in equipment buying, and a 36 per cent increase in the combined purchasing of materials and equipment from manufacturers. The nine months' purchases of materials and equipment from manufacturers were less than the corresponding purchases in 1929 by approximately $352,000,000, or 36 per cent, while the purchases, inclusive of fuel, were less by approximately $397,000,000, or 31 per cent.

Purchases of Supplies and Equipment from Manufacturers —9 Months*

	Materials† received from mfrs. (000)	Equipment ordered from mfrs. (000)	Total from mfrs. (000)	Fuel (000)	Total including fuel (000)
1929	$725,189	$304,699	$1,029,888	$254,911	$1,284,799
1930	595,559	129,160	724,719	234,441	959,160
1931	372,731	25,980	398,711	182,269	580,980
1932	206,800	2,362	209,162	131,400	340,562
1933	185,720	4,836	190,556	133,390	323,946
1934	319,875	60,048	379,923	154,696	534,619
1935	272,730	25,443	298,173	171,820	469,993
1936	395,947	102,162	498,109	189,649	687,758
1937	551,328	125,767	677,095	210,468	887,563

* Subject to revision.
† Includes rail and forest products.

THE APPEAL OF THE NEW TRAINS is certainly universal. Recently the Chicago, Milwaukee, St. Paul & Pacific received a request from a "lifer" in San Quentin prison in California for a photograph of the "Hiawatha". The prisoner explained that he is an artist and wanted the photo as a model so he could paint the train on the wall of his cell.

Ex Parte 123 Hearings Continue

Railroad presidents cross-examined and traffic witnesses heard — Walter suggests revenue pool

WASHINGTON, D. C.

Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, on Thursday afternoon, filed in Ex Parte 123 a motion asking the Commission to allow the proposed increased rates and fares to become effective immediately. The motion, after citing further development of adverse conditions since the filing of the application, said that "the gravity of the situation with which the railroads are now confronted is such as to impel" them to seek this means of relief "pending the determination of the issues involved in this case which have to do with a permanent rate structure." Judge Fletcher asked oral argument on the motion at an early date. Commissioner Aitchison, in response to a question, said that he had "no idea" what disposition the Commission would make of the request.

CROSS-EXAMINATION of railway chief executives and direct testimony and cross-examination of the carriers' traffic witnesses comprised the principal business of Ex Parte 123's Washington, D. C., sessions subsequent to those reported in last week's issue. The traffic testimony was in the main a massing of "expert opinion" in support of the presidents' statements to the effect that the proposed increases would in fact yield additional revenue, and that the higher rates would not cause any substantial traffic losses to competing agencies, which are in more or less the same fix as the railroads in their need for additional revenues.

The latter was confirmed in subsequent testimony on behalf of water carriers and American Trucking Associations, Inc., whose witness—Secretary Chester G. Moore—asserted that the trucking industry is "desperately in need of more revenue" because the margin between income and expenses has narrowed until it has reached "the vanishing point." Calling attention to rising truck operating costs during the past nine months, Mr. Moore stated that the minimum aggregate increase in gross revenue necessary to place the industry in a proper economic position to allow carriers to maintain adequate service was "about 20 per cent, although I realize that inasmuch as the railroads have applied for only a 15 per cent increase that that is about all we can expect to get for competitive reasons."

A suggestion for pooling revenues which might be derived from any increases granted was made at the December 7 hearing by Luther M. Walter, co-trustee of the Chicago Great Western. Mr. Walter, who agreed to submit a pooling plan later, would favor such action unless financially weak roads like the C. G. W. obtain relief through adjustments of divisions and lowering of mileage rates on refrigerator cars owned by railroad affiliates. Also, Mr. Walter declared that the rising cost of labor is "something every railroad executive should talk about—not duck." The witness said that Patrick H. Joyce, the C. G. W.'s other trustee, did not agree with him on the pooling idea or his labor views, but Mr. Joyce was in accord with his suggestions regarding divisions and refrigerator car rentals.

Meanwhile the Interstate Commerce Commission has announced a tentative schedule of further hearings to be held at Washington and at western and southern cities. The last session on this list is the February 7, 1938, Washington hearing before Division 7 which the commission has created to handle the case. Oral argument, the announcement says, will "follow the conclusion of testimony, *at once;*" and briefs "*may* be filed within 10 days after oral argument."

The hearing schedule covers both Ex Part 123 and Ex Parte 125, the latter being the investigation in connection with the Pullman Company's application for authority to increase its rates by 10 per cent. The principal testimony in support of the latter will be heard before Commissioner Claude R. Porter at Washington on December 20 and 21, although the Pullman case is also assigned for several of the other hearings.

Following the December 20-21 Pullman session will come the January 4, 1938, Washington hearing, also before Commissioner Porter, on Eastern passenger fares. Commissioner Marion M. Caskie will sit at Atlanta, Ga., January 10 to 14, 1938, while Division 7's chairman—Commissioner Clyde B. Aitchison—will conduct a session at Los Angeles, Calif., on January 11, 1938, the same day on which Commissioner Porter will begin a five-day hearing at Portland, Ore. Commissioners Aitchison and Porter will sit at Salt Lake City, Utah, January 17 to 22, 1938, while Commissioner Caskie will be at New Orleans, La., January 17 to 21, 1938, and at Washington on January 24, 1938. The Chicago hearing on January 25, 1938, will be before Division 7, as will the above-mentioned final Washington hearing on February 7, 1938. The Pullman case is also set for all of the foregoing, save Commissioner Porter's January 4, 1938, hearing on Eastern passenger fares and Commissioner Caskie's January 24 session, also in Washington; cross-examination of Pullman witnesses will be conducted at the Chicago hearing.

The cross-examination of railroad executives did not reveal any very determined attempt to break down their direct presentations. It was for the most part desultory, quite brief and, at times, seemingly of the "getting-on-the-record-to-justify-the-expense-account" variety. Some of the presidents were excused altogether. Questions ran in the main to the ability of the railroads to hold increased rates in the face of traffic diversions to competing transport agencies. In this connection Commissioner Aitchison reminded one witness of how present railway tariffs "are peppered over with symbols indicating reductions made to meet motor competition or water competition."

On the whole, however, the witnesses were firm in their belief that competing agencies are beset with financial difficulties akin to those of the railroads; and thus there must come increased charges all along the line, leaving the relative set-up about where it now is. R. C. Fulbright, chairman of the shipper group, con-

ducted the bulk of the cross-examination, asking, in addition to those along the foregoing lines, several questions about rates of interest on equipment trust obligations sold recently.

During the cross-examination of F. E. Williamson, president of the New York Central, Commissioner Porter broke in with several questions on the proposal of Eastern roads to increase their basic coach fares from two cents a mile to two and one-half cents. Many of Mr. Porter's questions were based on the editorial entitled "An Essential Distinction Between Rates and Fares" which appeared in the *Railway Age* of October 23, page 553. Also, Mr. Porter questioned Samuel T. Bledsoe, president of the Atchison, Topeka & Santa Fe, on the failure of the railroads to take any position in the recent case were the number of free transits on grain was increased from two to three.

More Testimony from Presidents

Railroad-president witnesses in addition to those whose testimony was reported in last week's issue were D. J. Kerr of the Lehigh Valley, E. E. Norris of the Southern and I. B. Tigrett of the Gulf, Mobile & Northern.

Directing his testimony to conditions on the Lehigh, Mr. Kerr told of that road's need for 25 new air-conditioned coaches, 1,500 open-top freight cars, 1,000 box cars, and 100 cabooses. "The cost of this equipment," he said, "would be approximately $7,800,000. Also, the company could make good use of additional locomotives. It is impossible under present conditions to give any consideration to these requirements. Furthermore, many improvements are needed in fixed property. The present maintenance program necessarily will have to be increased in the next few years. Bridges need to be rebuilt and strengthened; many new tools are needed for shops; and improved power plants and round houses are required at intermediate points. Under present conditions, no program can be made, and only necessary improvements can be carried out. The entire property is being maintained only to the extent necessary to make it safe. Higher revenues constitutes the only way in which adequate maintenance may be carried out in the future."

Greater revenues will result in increased employment and purchases by the railroads, in the opinion of Mr. Norris, who ventured to say that "those who are here to argue against our application for increased rates, or rather a restoration of former rate levels, have, without a single exception, increased the sales price of their products in recent months for the very same reasons that we in the railroad business are urging upon the commission in our request for advanced rates, namely, increased costs of all materials, increased wages and increased taxes."

Based on 1936 volume of traffic, the witness continued, the rates now being asked will produce additional revenues for the Southern of $10,743,752 which would be sufficient to give that system a return of 3.85 per cent on investment compared with 3.23 per cent in 1936. "Don't misunderstand me," he concluded, "I do not think the Southern is going 'bust,' but if relief is not granted the remedies that it will have to apply to keep solvent will be hard on its employees and at the sacrifice of service to the public."

The belief that freight rates should be as low as can be justified by the cost of capital and the cost of operation was expressed by Mr. Tigrett, who went on to say that the G. M. & N. finds itself "so burdened with new charges and additional operating costs that we fear we not only cannot earn anything on the investment of our stockholders, but we may be unable to continue meeting the interest on our bonded indebtedness." And "if the rate increases here sought are granted in whole, this will only put us back to where we were in 1936."

Thought 20 Per Cent Should Have Been Sought

The taking of direct evidence from traffic witnesses got under way on the afternoon of December 2 but was suspended the following morning to make way for the railway presidents' cross-examination. The first of the presidents to submit to cross-examination—F. W. Sargent of the Chicago & North Western—told Wilbur LaRoe, counsel for the American Paper & Pulp Association and the Traffic Conference of the Paper Industry, that the C. & N. W. must have increased revenues if it is going to survive. The witness personally felt that the railroads should have asked for an increase of "at least 20 per cent." Mr. Sargent would not concede that there was wasteful competition in passenger service between Chicago and the Twin Cities. No one road could handle all the business, he said, and give reasonable service to intermediate territories—he doesn't know how any trains could be taken off even though revenues were pooled.

With another questioner Mr. Sargent agreed that the North Western is "about as needy as any large railroad"; and that its short hauls comprise one cause of its difficulties He added, however, that "we're not here asking for relief" from that situation, which "is our handicap." The witness was not prepared to discuss the question of whether the C. & N. W., in view of these short hauls, would be able to hold increased rates as firmly as other lines. It may be impossible to keep all of the increases, he conceded, adding, however, that the competitive situation is changing. He thinks that the time is coming when truckers will have to pay a living wage; and, when they do, "railroads will find a way to live also."

In reply to John E. Benton, counsel for the National Association of Railroad and Utilities Commissioners, Mr. Sargent expressed doubt that the C. & N. W. could earn a fair return at present if allowed to install any basis of rates it desired. He added, however, that the North Western was not attempting to try its own case—it was joining all the railroads "in the face of an emergency."

Wages Raised to Avoid Strike

Hale Holden, chairman of the Southern Pacific, was led by Mr. Fulbright into a discussion of the competition which S. P. encounters from inter-coastal water lines operating through the Panama Canal. It was the witness' contention that the water carriers "are in the same position as the railroads"—they, too, want increases in rates. Because of this it was Mr. Holden's judgment that the S. P. isn't going to lose much traffic if the proposed increases are allowed. The railroads, he continued in response to further questioning, agreed to recent wage increases "rather than stand a strike," even though they knew that a rate-increase petition would be the inevitable result.

Asked if most capital outlays in recent years and prospective future expenditures were not due to demands of passenger services, Mr. Holden gave a negative reply. There has been more pressure for expenditures on account of freight service, he went on, adding, with reference to passenger service, that he didn't know "how far we are going in this frantic speed that we

talk about—we talk about it more than we make it—100 m.p.h. and more." Mr. Holden's cross-examination was concluded after further questioning by Mr. Fulbright on prices of S. P. securities. The questioner hit upon one above-par price which the witness explained was on an issue with a "tricky little Dutch Guilder provision" whereby "people think they can someday collect $1.60 for $1."

The brief cross-examinations of H. A. Scandrett, trustee of the Chicago, Milwaukee, St. Paul & Pacific, and Charles Donnelly, president of the Northern Pacific, were followed by that of Mr. Bledsoe, which brought forth Commissioner Porter's above-mentioned questions about free transits. Before the grain case, No. 17,000, Mr. Porter said, it was the practice of the railroads to grant unlimited transits; and, he added, transits were shown to cost about $30 each. The witness did not recall that phase of No. 17,000, but Mr. Porter went on to explain that the decision therein permitted only two free transits. Then, Commissioner Porter asked: "Do you think it was economical and efficient" for the carriers in the recent case "to take no position" and thus perhaps strengthen the basis for a commission decision raising the number of free transits from two to three? The witness thought that the carriers were undoubtedly confronted with many problems in connection with the transit situation. After questioning by Mr. Fulbright on prices of Santa Fe securities, in which connection it was agreed that that road can sell equipment obligations at less than four per cent, Mr. Bledsoe relinquished the witness chair to President Williamson of the New York Central.

Williamson on Passenger Fares

After a few questions from Mr. Fulbright on N.Y.C. fixed charges and the cost to it of equipment money, Mr. Williamson was subjected to the above-mentioned examination by Commissioner Porter on Eastern passenger fares. Observing that the increase over last year in gross passenger revenues has continued despite the decline in freight gross, Mr. Porter commenced reading extracts from the editorial in the October 23 issue of *Railway Age,* which, the commissioner thought, the witness would "recognize as a paper that's fairly favorable to the carriers of the country." Mr. Williamson replied that he thought "Mr. Dunn (Samuel O. Dunn, editor of *Railway Age*) tries to be fair to both sides."

The editorial dealt with what it put forth as the essential distinction between freight rates and passenger fares. Asked by the commissioner if he recognized such a distinction, the witness replied that "It is certainly a fact that when we move a passenger from New York to Chicago we are through with him—we do not hold him and store him as you do with freight."

"A passenger journey," Mr. Porter read from the editorial, "is a product of final consumption, whereas the haulage of freight is but one process in making a commodity available to the consumer. Thus it is that lower fares will usually stimulate passenger traffic, whereas lower prices at the point of consumption are required to stimulate freight traffic, and freight rates may affect such prices little if at all." Reminding Mr. Williamson that the author of the foregoing "is arguing for an increase in freight rates—he's with you so far as freight rates are concerned," Mr. Porter asked the witness if he agreed with the editorial's reasoning. Mr. Williamson conceded that some passenger business might be lost as a result of higher fares, but he thought the net would be more favorable; in this connection he believes that "perhaps the judgment of those of us who are in daily touch with the sale of this portion of our product is such that we are rather better able to determine passenger fares" than the author of the quoted editorial.

"But," Commissioner Porter persisted, "ordinarily you have the lowest freight rates where you have the highest density, yet in the East, where you have the highest density of passenger traffic, you want the highest fares." Mr. Williamson replied that while the density of travel in the East is high, much of the business is short-haul—"when Western roads get a passenger they get a good deal out of him." Also, the witness explained, a large proportion of the traffic in the East is business travel which moves anyway.

Aitchison Cites Lack of Eastern "In Between" Fares

When the discussion got around to passenger equipment, Mr. Williamson said that the New Haven coaches were "the most satisfactory standard coaches which I have happened to see in this country." Later Commissioner Aitchison told the witness that Eastern roads have "nothing in between" for the moderate priced passenger. Continuing, he said: "You either cater to a man who is willing to sit up in a coach, and you have to go to a special case like the New Haven to get an exception to the rule, or else you put him in a first class Pullman."

Daniel Willard, president of the Baltimore & Ohio, who followed Mr. Williamson told Commissioner Caskie that this was the first time he had taken part in a rate case "where we're not asking what we think we need." When Mr. Caskie asked why this attitude was assumed the witness replied that the carriers did not feel like taking the position that they should seek dividend-sustaining earnings when other business was depressed—all the railroads want is enough to continue doing their transport job and meet their financial obligations; and they hope that future increases in tonnage will furnish the dividends.

M. W. Clement, president of the Pennsylvania, discussed the equipment situation on that road in response to Mr. Fulbright's questions. The latter also asked if the "excellent understanding" with labor, which the witness had previously mentioned, had forced the carriers to seek more money from the public. Mr. Clement thought that other industries have perhaps made more costly concessions to their employees in recent years. The witness agreed with Charles E. Blaine, representing the National Livestock Association, that the present application resulted from a "continuation of a constant necessity for additional revenue on the part of the carriers over a period of six years."

Mr. Clement was followed in turn by E. S. French, president of the Boston & Maine, President Kerr of the Lehigh Valley, whose cross-examinations were brief, and J. B. Hill, president of the Louisville & Nashville, who was questioned at some length. Opening cross-examination of Mr. Hill by Mr. LaRoe turned to the relationship between Northern and Southern rate structures, the questioner reminding the witness of "how sensitive the South is as to rate relationships." Mr. Hill said that no "executive" consideration had been given to the fact, which he conceded, that the proposed increase would accentuate the situation now complained of. Pointing out that the present petition is not put forth as an emergency one, Mr. LaRoe next asked if it would be wise "to make permanent rates which leave the South worse off." Mr. Hill replied that it was not the carriers' intention to freeze the rate structure, al-

though he would not agree that territorial relationships warrant consideration "at this time."

Private Transport Facilities About at Peak

Commissioner Porter took up the questioning to ask if higher rates wouldn't divert the business of large shippers who were in a position to operate their own barge and truck fleets. Mr. Hill did not see any indication that such shippers would be disposed to enlarge their present transport facilities, which are "already extended as far as they perhaps want to go." Also, he pointed out, the operating costs of industry-operated transport facilities have also gone up.

At this point Mr. Fulbright asked that the commission have its staff bring up to date an exhibit on costs of railway materials which was filed in Ex Parte 103. Commissioner Aitchison stated that the request would be granted if the data did not come in naturally with valuation figures which he had previously announced would be brought up to date and incorporated into the present record.

Only one session was held on December 6—that in the afternoon at the opening of which Commissioner Aitchison announced that the commission at its morning conference had overruled the motion to dismiss the proceeding which had been filed by the assistant attorney general of South Dakota.

Ralph Budd, president of the Chicago, Burlington & Quincy and the first of the individual line executives to offer direct testimony, was the last to be cross-examined. He was questioned at some length with members of the commission manifesting considerable interest in reductions in unit costs of railway operation which have been attained over the past 10 or 15 years. Mr. LaRoe opened the cross-examination with the query as to whether Mr. Budd thought it wise to make a permanent freight rate structure at this time in view of the uncertain 1938 outlook, both as to volume of business and prices. The witness thought he could definitely say that the revenue per ton-mile has decreased to such a low point that rates must be raised to produce some prospects for a fair return. The carriers, he added, have gone far enough in cutting rates to indicate that such a course is not "the way out."

Rates Would "Still Be Low Rates"

Mr. Budd did, however, agree with Mr. LaRoe that higher rates cannot be justified merely by citing declining ton-mile earnings, conceding in this connection that, theoretically large volume at low rates is the ideal situation. But he did insist that with costs rising the way they are the railroads must now have "somewhat higher rates, although they will still be low rates." The problem, as Mr. Budd sees it, is one of making the railroads sufficiently prosperous to provide the best transport service, which is what the country needs and should have; but it takes money year-by-year to keep the railroad plant up to date.

Mr. LaRoe was cut short by Commissioner Aitchison when he sought to ask the witness if benefits of improvements in the art of transportation should be passed on to the public. The presiding commissioner thought that question should be "addressed to us;" he added that "it's immaterial what he thinks about it." And Mr. LaRoe was "quite content" if it was immaterial what the witness thought about the matter, which he had protested was covered by Mr. Budd on direct examination.

After several questions regarding the Burlington, and the benefits which it may get from higher rates, Mr. Budd was asked if the proposed increase was fixed at the 15 per cent figure by Western roads. He replied that he was of the opinion that the Western lines needed 20 per cent, in which connection he was in agreement with the view previously expressed by President Sargent of the C. & N. W.

When Mr. LaRoe, in questions about possible plans to help weak roads, got to the matter of pooling, he was cut short by Commissioner Aitchison, who suggested that the time had not arrived for arguments. Mr. Budd did say, however, that Western roads from time to time had considered plans for reducing costs by consolidations, pooling of operations, etc., but he had given no consideration to a study of rate divisions or the pooling of revenues sought in the present case.

"Convenience and Necessity" Should Apply to All Transport Extensions

In response to questioning by Mr. Fulbright on highway and waterway competition, Mr. Budd asserted that experience in abandonment cases has shown that the railroad is the "essential" carrier; and he thinks this fact should be considered when the question of supporting transport agencies is under review. Also, he believes that the "convenience and necessity" idea should be applied to the spending of public money for transport facilities.

The witness conceded that the Burlington has had no difficulty to date in financing equipment purchases, but he regards equipment certificates as temporary means of financing. They are, he said, unsatisfactory as a permanent vehicle, and moreover they do not take care of fixed property. When questioning on the Burlington's relatively favorable credit position had continued for a while Commissioner Porter asked if the witness thought the general situation is helped because there are "one or two roads out West with their heads above water." Mr. Budd thought not—nor did he believe that "it would help any to have those one or two go under."

Commissioner Porter started the discussion of reduced costs per 1,000 gross ton-miles when he read extracts on the subject from a recent address by L. A. Downs, president of the Illinois Central. Citing the drop from nearly $11 per 1,000 g.t.m. in 1921 to under $7 in 1935, Mr. Porter asked the witness if he thought that this trend would meet the present situation without an increase in rates. Mr. Budd said that the increased efficiency had not gone far enough to offset the rise in costs, although he wished it had. He added that it is "directly in the public interest to let the railroads earn enough to improve their plant to keep abreast of all scientific improvements in order to further reduce these costs." Also, he believes that such savings in the past have been passed on to shippers; and, he added, the railroads are now seeking to retrive a part of those great savings.

Asked by Commissioner Porter if he thought it wise to spend large amounts of money on passenger facilities, Mr. Budd replied that Burlington streamlined trains have earned a good return. He thinks the railroads have gone about as far as they can in curtailing passenger services, and thus they are justified in attempting to make the remaining services more attractive in order to hold present business and attract new patronage.

The railroad traffic witnesses, who, as stated at the outset, supported the presidents' testimony in connection with the prospective yield from the proposed rates

and lack of danger of any substantial traffic losses, were led off by F. W. Robinson, vice-president of the Union Pacific. He was followed by 11 traffic officers of other roads and of the territorial freight associations. Traffic-department testimony in support of the proposed 25 per cent increase in Eastern coach fares was deferred until the January 4, 1938, hearing in that connection.

Next J. M. Souby, assistant general counsel of the Association of American Railroads, offered the testimony of J. R. Warner, financial analyst, who discussed, among other matters, the narrowing spread between railroad revenues and expenses. Comparing this railroad spread with the more favorable ones which he found in other utility industries, Mr. Warner said that the railroad investor is concerned whether "he is to be given a chance to have his problem solved." Proceeding to discuss what he conceived to be "widespread misunderstandings" about some railroad problems the witness came to equipment-trust financing, and was there interrupted by Commissioner Aitchison who suggested that Mr. Warner should "just understand that we're not dumb on this thing—we've authorized issuance of hundreds of millions of equipment trust certificates." The witness was, however, permitted to develop his point that equipment trust prices "cannot be used as a criterion of railroad credit."

The above-mentioned appearance of Co-trustee Walter of the Chicago Great Western was preceded by that of C. G. W. Traffic Manager B. F. Parsons. Citing that road's trucks-on-flatcars plan to show its disposition to cooperate with common carrier truckers in its territory, Mr. Parsons said the arrangement, despite a November slump, has worked out "quite well;" and the C. G. W. is "well pleased." Like Mr. Walter, this witness thought that consideration might well be given to the equity of present divisions; re-adjustments, he added, would "go a long way toward restoring the health of the industry."

Walter Suggests Revenue Pool

Mr. Walter opened with a statement of his belief that it is the duty of the carriers to do all in their power to increase their net before they come to the conclusion. As stated above the two things which he thinks "need correction," and "need it very badly" are the mileage rates on refrigerator cars owned by affiliates of "prosperous Western lines," and the divisions of rates accorded the C. G. W. and other similarly-situated roads. Unless these two matters "can be promptly corrected" then Mr. Walter thinks "something should be done to see that the lines which need it shall get their share" of any increased revenues. Thus did the witness introduce his pooling proposal, the legal aspects of which he did not "undertake to discuss," leaving that for the briefs. Mr. Walter knows that "there is much criticism of pooling" but he's "not afraid of it." He believes that those roads which are prosperous "should not take advantage of their connections" whose plight is due to the present divisions set-up.

Wage Levels Should Not Imperil Industry

Mr. Walter had previously explained his exhibit which showed that in 1936 57 roads failed to earn their fixed charges by $112,000,000 or an amount equivalent to 3.39 per cent of the 1936 gross freight revenues of Class I roads. He added that "a tax or percentage charge of 3.39 per cent against each freight bill" would have produced enough to pay these 1936 fixed charges. In the first nine months of this year, the exhibit showed, 55 roads failed to earn fixed charges by $96,000,000 which was equal to 3.74 per cent of gross freight revenues of the period.

On the labor question Mr. Walter asserted his belief in the right of the worker to a fair wage, but he does not believe in maintaining wages at a level which is a peril to the employing industry. For this statement the witness knew he would be "criticized by labor", but, as pointed out above, he thinks the question is one which railroad executives should not "duck." It is his view that men and management should get together and make a wage that will permit the industry involved to survive.

Following Mr. Walter, each with a brief presentation, were P. D. Jonas, assistant comptroller of the Delaware, Lackawanna & Western, who offered testimony on behalf of the anthracite roads; J. H. Huntt, assistant to president, American Short Line Railroad Association, who explained a statistical exhibit showing the condition of the small roads; and witnesses for several water carriers. The latter included H. S. Brown, chairman of the Intercoastal Steamship Rate Association, who said that his organization had intervened in support of the railroad application because the intercoastal carriers, too, need more revenue. Already they have been forced to make some increases in commodity rates, and they are still in need of additional money.

A. T. A. Describes Truckers' Plight

Secretary Moore of American Trucking Associations said his appearance followed action taken by the National Classification and Rates Committee of A. T. A. at the trucking association's fourth annual convention at Louisville, Ky., November 15-18, when it was decided that the petition of the railroads offered a "much needed" opportunity to secure additional revenue without disturbing the relative competitive situation.

Mr. Moore introduced an exhibit prepared by A. T. A.'s Emergency Revenue Committee. The exhibit showed that gross revenue of 434 representative carriers reporting from all over the country had increased from $91,633,079 in 1936 to $105,125,661 in 1937, or 14.72 per cent, while total expense had increased from $89,358,468 in 1936 to $104,761,618 in 1937, or 17.42 per cent. The ratio of total expense to gross revenue by annual revenue size groups for 1937 to September 30 was 94.98 per cent for carriers under $100,000; 99.22 per cent for carriers from $100,000 to $499,999; 100.61 per cent for carriers of $500,000 and over, while the ratio for the entire group was 99.65 per cent. Net revenue per ton of freight for 340 carriers throughout the United States was $.0241 in 1937 as compared to $.1958 in 1936. The average price of truck tires had increased 18.45 per cent during the first nine months of 1937, while the cost of tubes had risen 14.55 per cent and the cost of gasoline 5.45 per cent.

"The expenditures for the industry as a whole have already equalled and in some territory have exceeded the total receipts," Mr. Moore asserted. "There is evidence to indicate a continuation of the rise in costs. Social security taxes have statutory provisions for increases. There no longer exists a margin within which the existing rates can absorb the increasing cost."

Mr. Moore said he did not consider that truck rates are in all respects necessarily governed by the level of rail rates, adding that "there are some instances where trucks can command a premium for their services, but there are other cases where they's can't command a premium and can only get business on equal rates."

Questioned about the extent to which voluntary and uniform action would be taken by the trucking industry in the event that a rate increase is allowed to the rails, Mr. Moore replied: "The committee has had expressions from many of the rate bureaus on this subject. In some instances, they have already authorized the filing, at the proper time, of short notice requests and relief from tariff circular provisions for the publishing of blanket increases in amounts equivalent to the increases granted the railroads."

The witness did not believe that tonnage would be diverted to private or contract motor carriers in the event the common carriers' rates went up. "There is no reason to believe," he said, "that contract and private carriers have escaped the increases in cost or that contract carriers are in any less need of increased revenue than common carriers. Any advantage which they may have with respect to lower costs in handling truckload business is offset by empty one-way mileage."

The Railroad Security Owners Association offered the testimony of E. D. Scruggs, head of the railroad statistical department of the Savings Bank Trust Company of New York. Mr. Scruggs explained an exhibit which showed that insurance companies, banks, educational institutions and foundations on December 31, 1936, held 55.9 per cent of the total funded debt of the railroads. Also, 49 legal reserve life insurance companies, all mutual savings banks and all national banks at the close of last year had only 16.3 per cent of their total bond investments in railroad bonds, as compared with 28.7 per cent in 1931. On another page of his exhibit Mr. Scruggs had set up a list of 21 railroads, not now in bankruptcy or receivership which, according to his calculations, would, because of increased costs, report a 1938 deficit after fixed charges of $94,568,000—assuming there is to be no increase in rates nor diminution of maintenance expenses as compared with 1936. The list includes such roads as the New York Central, Baltimore & Ohio, Illinois Central, Atlantic Coast Line, Atchison, Topeka & Santa Fe, Chicago, Burlington & Quincy and Southern Pacific.

C. of C. Committee Sees Roads in "Urgent Need"

The "urgent need" of the country's railroads for substantial increase in revenues is emphasized in a report made to the board of directors of the Chamber of Commerce of the United States on December 3 by its committee on Transportation. The committee reached the following additional conclusions with respect to the existing situation: "This urgent need can be met only by increasing rates; increases at this time are justified in the public interest; rate changes of a sweeping character, both up and down, have been made to meet changed conditions on a number of occasions in the past 25 years; the character and extent of such changes are proper questions for decision by the Interstate Commerce Commission in accordance with its established procedure; the public interest requires the greatest practicable expedition in the decision of the pending general railroad rate case, Ex Parte 123."

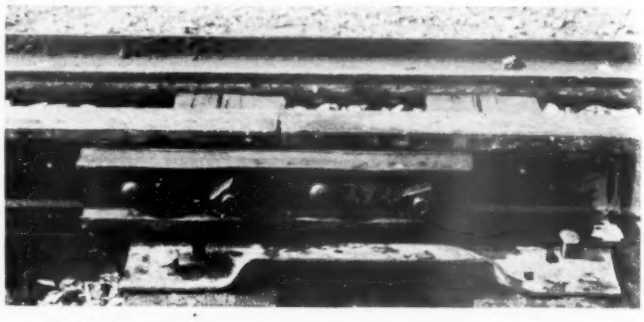
Rail Joint Tests Now in Progress

(*Continued from page 834*)

The joints in the other four sections, all of which have four-hole bars, are as follows:

6. Rail Joint Company, B-34 controlled bearing in head only
7. Special head-free short-toe bar
8. Special head-free long-toe bar with special tie plates under the joints
9. A.R.E.A. standard bar with base planed to permit use of a special base wedging device on two inside bolts

The Pennsylvania test track, which carries approximately 25,000,000 gross tons annually, is laid with 131-lb. controlled-cooled rail that was surface ground and



Ties Were Not Spaced in the Pennsylvania Installation

beveled after laying, and in addition the rail on one side was end-hardened in the field. This test track was divided into 12 sections of a half-mile each. The joint construction in the various sections is briefly as follows:

1. A.R.E.A. full-bearing, toeless, six-hole
2. A.R.E.A. full-bearing, toeless, four-hole
3. Section F-4 toeless, full-bearing, six-hole
4. Section F-4 toeless, controlled bearing on head and base—six-hole
5. Evertite joint, four-hole

The remainder of the bars are all Rail Joint Company sections, with six holes, except as noted.

6. Section B-19
7. Section B-19 controlled-bearing
8. Section B-19 controlled-bearing, head and base (four-hole)
9. Section B-19 toeless, controlled-bearing
10. A-39 full-bearing
11. A-13 full-bearing
12. B-43 full bearing

A tentative schedule of data to be taken during the course of the investigation includes such items as expansion gap, rail head wear, batter, fit of the bars and variations in camber. A large number of bars of each type were measured for camber in both vertical and horizontal directions before they were applied and afterward. Joints will be identified by a number on copper marking tags attached to the tie, and the observations will be tabulated. Measurements have also been made on the out-to-out distances between the bars at their ends and middle to learn to what extent the bars will be pulled in and bent under service as times goes on. Rail surface profiles at and near the joint will be observed each year. Measurements of the bolt tension found in many of the joints will be made from time to time, and the relation between bolt tension and condition of the joints may be studied. Sample bars will be removed from the rails from time to time to measure wear on the fishing surfaces of both the bars and the rails. It is anticipated that the investigation may be expanded to include the taking of data supplementing that already scheduled, possibly embracing tests for track depression and durability of rail support.

A HIGH-SPEED PASSENGER SERVICE between Bradford and London was recently inaugurated by the London & North Eastern (Great Britain) by operation of a new streamlined train, known as the "West Riding Limited," and similar in construction to the "Coronation" trains operating in the London-Edinburgh service. Stopping only at Leeds, the new train maintains an average speed of 68 m.p.h. on the run from Bradford to King's Cross, London, and of 68.5 m.p.h. in the opposite direction.

NEWS

Pelley Opposes Dispatchers' Bill

A. A. R. Head contends problems of union can be solved by arbitration

Contending that it is possible to solve all matters of grievance under the agreement that was reached between the Association of American Railroads and the American Train Dispatchers Association in May of this year, J. J. Pelley, President of the A. A. R., on December 8 told a sub-committee of the Senate Interstate Commerce Committee that it was not worth while for them to consider the six-hour-day-for-train-dispatchers bill (S. 1492). Mr. Pelley, testifying in opposition to the bill, went on to say that he was at a loss to understand why rail labor is constantly seeking legislation to remedy their "real and fancied wrongs." He expressed the belief that under the agreement signed on May 27 last, any subject could be arbitrated. When asked by Senator Brown of New Hampshire as to why the dispatchers were pressing this bill in view of the agreement signed with the railroads, J. G. Luhrsen, president of the American Train Dispatchers Association, said that the agreement was not a substitute for the six-hour-day bill.

The case for the railroads in opposition to the bill was handled by J. Carter Fort, general solicitor for the A. A. R., and the witnesses were Dr. Harvey Bartle, chief medical examiner of the Pennsylvania, C. O. Peckenpaugh, general manager of the Burlington lines in Texas, and Mr. Pelley. Dr. Bartle, who has been with the Pennsylvania in a medical capacity for the past 34 years, testified that it was his observation on the Pennsylvania that the duties of dispatchers do not undermine their health. He also felt that they were not more predisposed to mental diseases and nervous breakdowns. Pointing out that the average life expectancy for all people is around 57 years, he stated that on the Pennsylvania the average for train dispatchers is 63.4 years.

Mr. Peckenpaugh, who has had 47 years of railroad service, starting out as a telegrapher and then becoming a dispatcher and chief dispatcher and gradually working up until he reached his present position, told the committee that at no time had he ever heard a complaint from a dispatcher regarding working conditions. He also expressed the opinion that the use of the telephone had markedly decreased the amount of work that the dispatcher had to do. He criticized the four transfer periods that would be necessary if the Neely bill becomes law and also criticized the eight-hour day for chief dispatchers.

Mr. Luhrsen contended that the excessive mental strain on dispatchers had caused their mortality rate to be very high. He also pointed out that often the dispatcher does not have an opportunity to eat his lunch or has to eat it while working and that he had received many complaints from his constituents, stating that they were so busy that they could find no time to answer Nature's call. The basis of the dispatchers' complaints appears to be that there are too few men working and their work is much too heavy. When asked as to how much he felt the bill would increase the expenses of the carriers, Mr. Lurchsen said he thought $2,500,000 would be about the right figure. Later Mr. Fort told the committee he thought $3,000,000 would be closer to the proper amount.

C. L. Darling, secretary-treasurer of the dispatchers' union, also testified concerning working conditions, and held that the bill should be enacted for the benefit of the health of the individual dispatcher and also in the public welfare. J. M. Hood, president of the American Short Line Railroad Association, deplored the make-work theory, which, he said, was the basis of the bill. He predicted that the enactment of the bill would increase the cost of dispatchers for the short lines 100 per cent.

At the close of the hearing Senator Brown, chairman of the sub-committee, told Mr. Pelley and Mr. Luhrsen to get together and work this problem out so that they would not have to take up the committee's time.

Equipment Depreciation Orders

The Interstate Commerce Commission has issued a new series of sub-orders and modifications of previous sub-orders in No. 15100, Depreciation Charges of Steam Railroad Companies, prescribing equipment depreciation rates for 18 railroads, including the New York, New Haven & Hartford.

The composite percentages, which are not prescribed rates, range from 2.19 per cent for the Monson to 13.37 per cent for the Winifrede. The New Haven's composite percentage of 3.21 per cent is derived from the following prescribed rates: Steam locomotives, 2.91 per cent; other locomotives, 3.12 per cent; freight-train cars, 4.07 per cent; passenger-train cars, 2.72 per cent; floating equipment, 2.57 per cent; work equipment, 4.21 per cent; miscellaneous equipment, 15.22 per cent.

Wheeler To Try "New Approach"

Will call in management and labor for round-table conferences

Deciding to abandon the "inquisitorial" method in favor of the "conference" method of obtaining information from railroad executives, Senator Wheeler has made it known that after the first of the year he will discontinue the rail finance inquiry which has been running during the past year and call in representatives of management and labor in an attempt to solve some of the more vexing problems of the industry so that it may play its part in the recovery drive which has been recently initiated by the administration. The plan, as outlined, is to drop the scheduled hearings which have been set for several of the nation's leading carriers. It is understood that the committee's investigators had amassed a large amount of material which was to be used in a thorough going-over of the financial structures of the various companies.

Invitations, instead of subpoenas, will be issued to representatives of labor and management, asking them to come and sit down with the Senate Interstate Commerce Committee and try to discover what the real ills of the industry are and what legislation should be drafted to correct them. It is understood that the question of whether or not the hearings will be public or closed will be left entirely to the wishes of the witnesses. Senator Wheeler was quoted as saying that "this is going to be a sincere endeavor to work out an economic recovery program for the railroads of the country." President Daniel Willard of the Baltimore & Ohio and George M. Harrison, chairman of the Railway Labor Executives Association, are understood to have been tentatively selected to head the list of those who will be invited to attend the conferences.

After completing hearings on the Chicago, Milwaukee, St. Paul & Pacific this week or the early part of next week, the committee, on or about December 16, will begin a series of hearings on the Pennsylvania and the Pennroad Corporation.

At the opening hearing of the committee on the subject of the Milwaukee, Senator Truman, who was presiding, charged that the representatives of two of the country's leading law firms, one in New York and the other in Chicago, were unethical in their handling of the first reorganization

of the Milwaukee in 1925. The men specifically accused were Robert T. Swaine, of the New York firm of Cravath, de Gersdorff, Swaine & Wood, and Ralph M. Shaw, of the Chicago firm of Winston, Strawn & Shaw. Senator Truman read into the record a prepared statement in which he declared that the evidence before the committee is such as to make "imperative" an inquiry by the New York and Chicago Bar Associations into the "conduct" of these firms in the first receivership of the railroad. The road is now going through its second receivership.

Mr. Swaine and Mr. Shaw later issued the following statement: "The statement given out to the press by Senator Truman at the close of today's (December 6) hearing before the Senate Committee on Interstate and Foreign Commerce, evidently prepared in advance of the hearing, ignored actual testimony at the hearing and gave a wholly distorted version of the facts."

Senator Truman's statement also revealed the fact that as a result of disclosures made at a recent hearing of the committee, the Bar Association of St. Louis has ordered an inquiry into the conduct of a "subordinate lawyer on the staff of the Missouri Pacific Bankruptcy Trustee." The Senate committee had previously read into the record letters which showed that this official had been aiding the Van Sweringen interests at the same time that he was presumed to be devoting his time to the interests of the trustee.

On December 7 the Senate committee attempted to show that the New York banking firm of Kuhn, Loeb & Co. put through a plan of reorganization of the company in 1925 which permitted the banking house to completely dominate the Milwaukee system. Senator Truman again charged that under the 1925 reorganization Kuhn, Loeb & Co. had been able to name the president, the board of directors and were "in complete control of the road." Letters were introduced into the record which showed that H. A. Scandrett, former president and now a trustee of the road, felt that he was indebted to the banking house for his election to the presidency of the road. In a letter to Jerome J. Hanauer, then a member of Kuhn, Loeb & Co., Mr. Scandrett said: "It is appropriate that at this juncture I express my appreciation of the confidence you have reposed in me in making so imminent my election as president of the new Milwaukee road, but I find myself utterly unable to do so. I can and do say that I am going to give to the new job all I have, and, while I realize I have much to learn, and that the problems and difficulties will be many, I shall not take counsel of my fears, but approach and carry on the work in the conviction that with the help I know I will have from you, and from others, the problems can be solved and the difficulties surmounted. In the meantime all I can say is that I am very grateful to you for the confidence reposed in me."

The committee also took up the question of the part that the Guaranty Trust Company of New York had played in the first receivership. Merrell P. Callaway, vice president in charge of the trust department of the Guaranty Trust Company, was questioned as to whether he thought it was proper for him to receive $25,000 for his services as an individual trustee under the Milwaukee's first mortgage when his bank was the corporate trustee under the same mortgage. Mr. Callaway said that he felt it was and went on to point out that he felt himself personally responsible under the trust and that he had well earned his money. He also pointed out that Kuhn, Loeb & Co. had opposed the payment of the $25,000 to him and had wanted to settle with the Guaranty for $100,000 instead of $150,000. He took the matter to court, and Judge Wilkerson of the Federal District Court in Chicago decided that he was entitled to the $25,000. The Guaranty got $125,000 for its share of the work as trustee under the mortgage.

At the December 8 session of the committee, after committee investigators had placed in the record letters which showed that Mr. Shaw, acting under the direction of Paul D. Cravath, member of Cravath, de Gersdorff, Swaine & Wood, had privately talked to Judge Wilkerson regarding the merits of the bankers' plan of reorganization, Senator Truman severely criticized this action of the judge and suggested that there should be a House investigation of Judge Wilkerson with a view to instituting impeachment proceedings against him. Senator Truman said that from what he had seen in the proceedings thus far he was convinced that Judge Wilkerson's actions in the first Milwaukee reorganization warranted impeachment proceedings being brought against him.

C. & O. Huntington Storehouse Destroyed by Fire

The storehouse of the Chesapeake & Ohio shops at Huntington, W. Va., was destroyed by a fire of undetermined origin on November 28. Officers estimated the loss at $100,000, all of which is covered, however, by insurance. The blaze was confined to the storehouse proper by a protective fire wall and did not spread to the remainder of the shop building, which will remain in operation. The shop telephone system also suffered minor damage by the blaze.

Dunloy Celebrates 50 Years of Service with Lackawanna

William S. Dunloy, assistant treasurer of the Delaware, Lackawanna & Western, celebrated on December 5 the completion of 50 years' service with his road. A native of Brooklyn, N. Y., he entered railroad employment December 5, 1887, as an office boy in the treasury department at the Lackawanna general offices in New York, during the presidency of Samuel Sloan. After several promotions, Mr. Dunloy was appointed cashier and became assistant treasurer on March 1, 1933.

Chicago Special Agents Hold Annual Banquet

The annual banquet of the Chicago Railway Special Agents and Police Association was held at Chicago on December 9 with an attendance of 800 representatives of railroads, city and county law enforcement officers, mayors, and state senators and representatives. The principal speakers were R. V. Fletcher, vice-president and general counsel of the Association of American Railroads; Chief Justice Cornelius J. Harrington of the Criminal Court of Cook County; and T. T. Keliher, chief special agent of the Illinois Central.

Self-Analysis is Theme of A. A. R. Safety Circular

A railroad employee confronted with his own image in the mirror sounds the leading note of the December program of the Safety Section, Association of American Railroads. "You're the chap I'm counting on for protection" is the conclusion reached by the employee pictured. The circular accompanying the poster requests employees to stand before the mirror and ask "the fellow you see there" a few personal questions about safety habits. Following a list of suggested key questions to be posed in the personal inventory, the circular concludes: "If the fellow in the mirror stacks up on the right side, then you are looking into the face of a desirable employee, a good citizen, perhaps a good father and a dependable friend."

State Commission Blames Engineman for Collision

An investigating board of engineers for the Illinois Commerce Commission on December 1 blamed an engineman's failure to pay close attention to his job as a cause for the collision between two Illinois Central suburban trains on November 22, when one passenger was killed. The commission at the same time called attention to the engineman's perfect record, his good physical and mental condition and his familiarity with his duties and the run. The engineman reported after the accident that when he saw the lights of the motionless train ahead he was too close to stop.

Russian Rail Transport 100 Years Old

Russia is celebrating the opening of its first railway route between Petrograd and Pavolovsk in November, 1837, in an exhibition entitled "100 Years of Russian Railways," housed in the Leningrad Industrial & Transport Institute, it is reported in the Railway Gazette (London). Franz von Gertsner, the famous Austrian engineer, who first proposed the line, was granted the concession in 1836 and built the line on a six-foot gage, utilizing English rails and rolling stock.

Von Gertsner later came to live in the United States and was buried in Philadelphia, Pa. He was the author of "Intercommunication in the United States of North America," a detailed description of the carriers existing about 1840.

Advisory Board Group to Study Loss and Damage Prevention

A special committee composed of representatives of shippers and carriers has been appointed by the Atlantic States Shippers' Advisory Board to prepare a circular of helpful suggestions with regard to loss and damage prevention. The committee is headed by C. L. Hilleary, gen-

eral traffic manager, F. W. Woolworth Company. The railroad members of the committee include F. G. Love, New York Central; J. H. Butler, Railway Express Agency; J. M. Heath, Lehigh Valley; G. M. McMichael, Erie; E. Pettit, Pennsylvania; and F. W. Wittenbart, Central of New Jersey. Shipper members include S. E. Hughes of the McLellan stores; C. Pascarella, of the Frances H. Leggett Co.

Club Meetings

The New England Railroad Club will hold its next meeting on Tuesday, December 14, at the Hotel Touraine, Boston, Mass. Following the dinner, to be served at 6:30 p. m., T. H. Carrow, superintendent of safety, Pennsylvania, will deliver an address on the subject "Progress and Possibilities in Railroad Safety."

Direct Testimony Ended in N. J. Tax Relief Case

Hearings of oral testimony have been completed in the proceedings brought before Federal Judge Philip Forman at Trenton, N. J., by seven New Jersey carriers seeking relief from allegedly excessive taxes levied by the state for 1934, 1935 and 1936. January 25 has been set as the date for summations and filing of briefs. As reported in the *Railway Age* for November 13, page 697, decision has as yet been reserved on the appeal from the federal district court argued before the federal circuit court of appeals at Philadelphia, Pa., for taxes levied for 1932 and 1933.

Pending further hearing, payment of the state tax levy for 1937 has been withheld in part by those carriers concerned in the litigation.

Traffic Club of Baltimore Holds "Railroad Night"

Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, was the guest speaker at the Traffic Club, Baltimore's "Railroad Night" which was held on December 7, at the Lord Baltimore Hotel in that city. The Baltimore Society of Model Engineers had a complete track layout and operating scale model trains on exhibition, and there was also an array of scale models and displays by the various railroads represented in Baltimore. Eight model trains were exhibited, some of which were in operation all during the evening. The Entertainment Committee adopted a novel method of handling tickets and programs. Entrance to the ball room was through a model of a train observation platform, and dinner tickets were printed in the form of railroad passenger tickets and programs in the form of railroad schedules.

New "Red Arrows" for Swiss Railways

As an addition to its fleet of streamlined Diesel trains known as the "Red Arrows", the Swiss Federal Railways has inaugurated on its Lausanne-Basle and Geneva-Zurich lines two three-car express trains built of light steel, each consisting of two motor units and an intermediate trailer car. Each motor car contains four passenger compartments of the upholstered third-class type, while the middle car is fitted with a third-class compartment, two second-class compartments, a baggage section and a buffet where simple meals are served. The train carries a total of 220 seats. Eight Diesel engines furnish 2,000 hp. and make possible a running speed of 125 kilometers per hour (77 m.p.h.). The maximum speed attained is 150 k.p.h. (93 m.p.h.)

Mitchell Inquiry Is Postponed

The Interstate Commerce Commission postponed from December 10 to an indefinite date the hearing which had been set to investigate the charges of Representative Mitchell, negro congressman from Chicago, that he had been discriminated against when he was forced to give up his Pullman compartment for a seat in the "Jim Crow" car when his train entered Arkansas. The hearing has been set for Chicago, but due to the fact that Congress is in session, Representative Mitchell found it impossible to attend the hearing at this time.

Chairman of Mediation Board is Dead

James W. Carmalt, chairman of the National Mediation Board, died at his home in Washington, D. C., on December 2, after an illness of several weeks. He was 65 years of age.

Mr. Carmalt had served on the board since 1934. He was engaged in private law practice in Washington for several years prior to his appointment. He formerly was a chief examiner for the Interstate Commerce Commission and in 1933 and 1934 was counsel to the Federal Coordinator of Transportation. During the war he was on the staff of the War Industries Board, and in 1918 and 1919 he was assistant to the general counsel of the United States Railroad Administration. He later returned to private law practice, representing various railroad corporations and shippers.

Harris & Ewing

James W. Carmalt

Mr. Carmalt was born in Montrose, Susquehanna County, Pennsylvania on October 24, 1872. Graduating from Hamilton College, Clinton, N. Y. in 1895, he studied law at Columbia and New York law schools. He was admitted to the bar in 1898 and practiced in New York until 1909. Becoming well-known as a student of the legal problems of transportation, Mr. Carmalt went to Washington in 1909 to accept a position on the legal staff of the Interstate Commerce Commission. In 1913 and 1914 he prepared and presented the Railway Advance Case in collaboration with the Hon. Louis D. Brandeis. He served as chief examiner of the commission from 1914 to 1918.

Otto S. Beyer, a member of the board, has been designated to act as chairman for the unexpired term of Mr. Carmalt.

Spanish Collision Kills 20

Twenty persons were killed and many injured when a suburban electric train on the Central of Aragon, Spain, collided with a steam train near the main terminus at Valencia, according to news dispatches.

Replacement of Berlin Rail Stations Planned by Hitler

Replacement of the present group of railroad terminals in Berlin, Germany, by two completely new stations and construction of connecting facilities for through trains are included in plans for the material improvement of the capital city made public recently in a speech by Chancellor Adolf Hitler. The two new terminals are to be built "in the grand manner" and will simplify in great measure the present complicated train operations in the city. It is planned also that a tunnel be constructed connecting the two stations, which will furnish a continuous route for international trains passing through the city between Italy and points south to Scandinavian termini or between points west and Poland.

New Bureau Head With I. C. C. 28 Years

Frank S. Fowler, whose appointment as Director of the Bureau of Accounts of the Interstate Commerce Commission was announced in the *Railway Age* for December 4, has served continuously with the Interstate Commerce Commission for 28 years, having been appointed field examiner of accounts for the commission in 1909. During the time he has been with the commission, Mr. Fowler has served successively as field examiner, examiner in charge of field parties, examiner in charge of the branch office of the Bureau of Accounts in St. Louis, chief of the Depreciation Section, and assistant director of the Bureau of Accounts.

He participated in the financial investigations of the New York, New Haven & Hartford in 1913, and the St. Louis & San Francisco in 1914. Prior to his appointment to the staff of the commission, Mr. Fowler served as travelling auditor for the Lehigh Valley.

"City of Los Angeles" in Service on December 27

The 17-car streamliner City of Los Angeles, now being built for the Union Pacific and the Chicago & North Western, will be placed in service between Chicago and Los Angeles on a 39¾-hr. schedule on December 27. The train will be exhibited

at Chicago on December 15 and at the Grand Central station in New York on December 18. On December 21, following the New York showing, the new train will carry winter sports fans to Sun Valley, Idaho, for the opening of the second season of Sun Valley Lodge. On December 24 and 25, following this special inaugural run, the train will be exhibited in Los Angeles, at which point it will be placed in regular service on December 27. On that date the present train of that name will be sent to the shop for overhauling, and on February 20 it will be returned to service. These two trains will then provide 39¾-hr. service between Chicago and Los Angeles, with departures from each terminal every third day.

Secretary of Commerce on Railroads

Secretary of Commerce Daniel C. Roper devotes a brief paragraph to the railroads in his annual report for the year ended June 30, 1937. Under the heading "Railroads Experience Some Improvement" he says that "The financial condition of the railroads improved moderately during the year, but recovery in railroad earnings has been slow. Operating revenues of class I railroads were up more than 15 per cent in comparison with those of the preceding fiscal year, and operating expenses increased a little more than 11 per cent, with the result that net railway operating income increased more than 34 per cent. Moreover, net income increased from $35,000,000 to $228,000,000. This improvement was largely the result of an increased volume of traffic, which in the case of freight was 20 per cent and of passengers carried 22 per cent. Passenger fares of eastern railroads were reduced materially just before the beginning of the past fiscal year, and the freight surcharge was removed December 31, 1936."

The Canadian Roads in October

The Canadian National had net operating revenue for October at $3,431,576, as against $3,638,519 a year ago, while net for the ten months period ended with October was $13,959,438, as compared with $9,843,980 in the corresponding period of 1936. In October operating revenues were $19,328,357, an increase of $52,079 over October, 1936, but expenses were also higher by $749,022 at $15,896,781, leaving net for the month of $3,431,576. This is a decrease of $206,943 from the net a year ago. For the ten months operating revenues were $165,403,656, against $153,234,590 in the corresponding period of last year, resulting in an increase of $12,169,066. Operating expenses up to October 31 were $151,444,218, compared with $143,390,610 for the similar period of 1936. Net operating revenues for the ten months' period of 1937 were $13,959,438, compared with $9,843,980, an increase of $4,115,458 over 1936.

The Canadian Pacific in October had net operating revenues totaling $4,279,107, as against $4,403,183 during the same month a year ago, while net operating revenues for the ten months ended with October were substantially higher at $17,353,048, as against $16,230,651 in the 1936 period. Gross for the month at $14,729,165 was $479,743 higher, but operating expenses were also higher by $603,819 at $10,450,057. For the ten-month period gross at $119,831,155 showed an increase of $5,638,154 over the corresponding period of 1936. Operating expenses rose from $97,962,349 to $102,478,107. This resulted in an increase in net of $1,122,396 during the period.

"Are You as Good a Railroader as John Gordon?"

Employees of the Boston & Maine have had placed in their hands a small booklet discussing the problems of a railroad career, with special emphasis on public relations. Issued in connection with the road's "Courtesy Campaign", the 15-page publication, written by W. A. Wheeler, contains a series of letters supposedly written by "old-timer" John Gordon to the son of an old friend who, during the course of the letters, embarks upon the usual problems of the novice in train service. Herein the writer urges the young fellow to consider his job a "career" and points out that salesmanship is a major part of the trainman's responsibilities.

A foreword written by E. S. French, president of the B. & M., urges that employees seek to become the "John Gordon" type of railroader. Carrying further this thought, the back cover of the booklet contains the query: "After reading this booklet, how would you answer the question on the front cover?" The latter is a large caption: "Are you as good a man as John Gordon?"

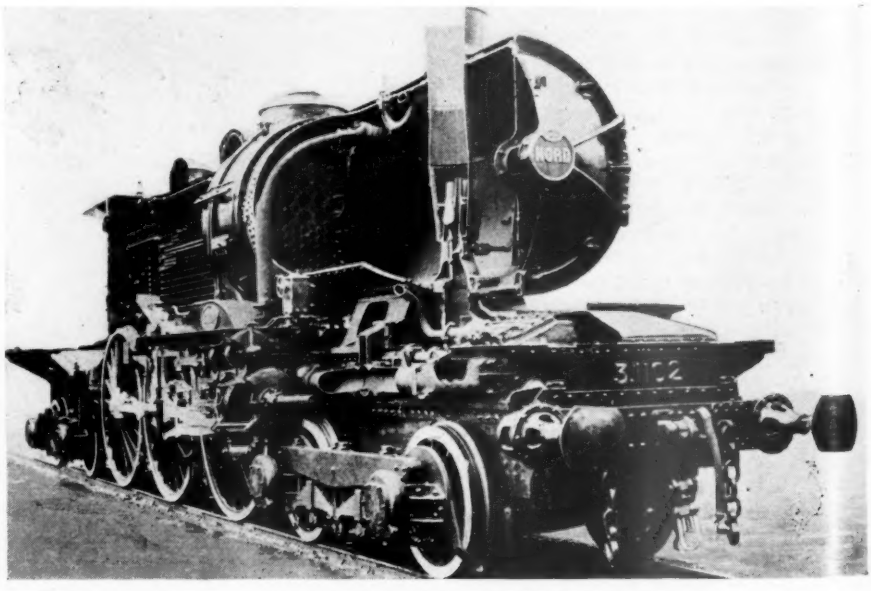
St. Louis Sues Terminal Association for $5,000,000

The City of St. Louis on December 2 filed a suit in the Circuit Court in that city against the Terminal Railroad Association for $5,000,000 damages, charging the association with breach of contract in its failure to carry out an agreement made seven years ago to advance the funds required for construction of additional railroad approaches to the Municipal Bridge. The contract was made in October, 1930, and under its terms the Terminal Company agreed to advance the necessary money for the construction of added railroad approaches which would permit full use of the bridge by the Railroad Association and its proprietary lines. The city maintains that the terminal obligated itself to use the bridge to an extent that would assure a toll income from the railroad deck of at least $500,000 a year after the span was fully accessible to the railroads.

Under the contract, the association did advance $1,410,720, the last installment being paid on January 3, 1933, at which time it announced that because of financial conditions occasioned by the depression it could make no further advances. After much delay the city secured the required funds to complete the six new railroad approaches, three on the Illinois side of the river and three on the St. Louis side, through passage of an $800,000 bond issue and a WPA grant of approximately $300,000. The city contends that if the terminal had carried out its contract, certain of said approaches could have been completed and used by the defendant and other railroads on or before January 1, 1933, and that all approaches and work could reasonably have been completed on or before January 1, 1934.

Locomotive Cut Away for Exhibition at Paris Exposition

To make clearer to the layman the internal complexities of the steam locomotive, the Northern Railway (France) placed on exhibit at the Paris World Exposition an old Pacific type locomotive dismantled so as to show its internal construction. The boiler was cut in half, exposing flues, the interior of the fire box was bared for inspection and all operating parts were opened up to show the public "what makes the wheels go." The path which the steam takes in its journey to the



This French Engine Has Been Denuded to Show Paris Exposition Patrons the "Why and Wherefore"

cylinders was indicated by twinkling colored lights in the tubes and steam passages, with distinctive colors for saturated, superheated and exhaust steam, respectively.

N. Y. Traffic Club Elects Officers

The Traffic Club of New York has announced its panel of officers for the ensuing year. They are: President, H. R. McLean, eastern traffic agent, Central of Georgia; First Vice-President, J. A. Quinlan, general traffic manager, St. Regis Paper Co.; Second Vice-President, James W. Lee, assistant foreign freight agent, Baltimore & Ohio; Secretary, Horace Jennings, traffic manager, Albert D. Smith & Co.; Treasurer, George C. Roddy, vice-president and general manager, Interlake Terminals, Inc.

August Crossing Accidents

A total of 146 persons lost their lives in August, as a result of accidents at highway-railroad grade crossings, according to the Safety Section, Association of American Railroads. This was an increase of six compared with the number of fatalities in the preceding month this year and an increase of 28 compared with August, last year. Persons injured in August, totaled 314 compared with 280 persons in July, and 308 persons in August the preceding year. Reports showed 300 accidents at highway-railroad grade crossings in the month of August compared with 265 in the preceding month and 273 in August, 1936.

In the first eight months of 1937, there were 2,733 accidents at highway-railroad grade crossings, an increase of 250 compared with the same period last year. Fatalities resulting from those accidents in the eight months' period in 1937 totaled 1,144, an increase of 117 compared with the same period one year ago, while the number of persons injured was an increase of 207, there having been 3,090 persons injured in the eight months' period this year.

I. C. C. Grants Western Fare Increases

The Interstate Commerce Commission has granted a sixth section application of the carriers in the western and southwestern territories to file on 10 days notice tariffs increasing passenger fares in tourist sleeping cars from 2 to 2¼ cents per mile and corresponding increases in round-trip fares.

Round trip coach fares will be increased from 180 per cent of the one-way 2 cents per mile rate to 190 per cent, while the all year excursion fares will be increased 10 per cent over the present fare. One-way transcontinental special coach fares, which are now 1½ cents per mile, will be increased 14.5 per cent, and round-trip transcontinental six months limit excursion fares will be raised approximately 13.34 per cent. Round-trip station-to-station first class six months limit rates are to be increased from a basis of one and two-thirds of the one-way fare of 3 cents a mile to a basis of one and five-sixths of the one-way fare. The 30-day round-trip intermediate class fare, good in tourist sleepers, will be increased from 180 per cent of the one-way 2 cent fare to 190 per cent of the new 2¼ cent rate. The commission has also granted applications from carriers in other territories to bring their through rates in alignment with the new Western rates. The carriers estimate that the increased rates will yield an additional $2,500,000 in revenue.

October Truck Loadings 4.28 Per Cent Under September

While the volume of freight moved by truck in October, 1937, was 2.78 per cent greater than the volume transported in the same month last year, the current figure was 4.28 per cent less than it was in September, 1937, according to the monthly statistics of truck loadings issued by the American Trucking Associations, Inc. These figures are based on comparable reports filed with the association by 130 motor carriers in 28 states and the District of Columbia. The total tonnage transported by these carriers in October was 493,465 tons as compared with 515,578 tons in September and 480,102 tons in October, 1936.

Seasonal fluctuations, plant shutdowns and labor disturbances were given as the chief reasons for the decline in tonnage compared with the September volume. The A. T. A. truck loadings index figures based on the 1936 monthly average as 100, for October stood at 122.8 as compared with 109.83 in September. "The total volume reported," says the A. T. A., "while representative of a fair cross section of the industry, should not be taken as indicative of the total volume of freight being moved by truck. The compilation is designed to show the trend in truck loadings, rather than the actual tonnage transported."

Fair Gives Frisco Bay Ferries New Lease on Life

San Francisco Bay passenger ferries, which are scheduled to cease operation when rail transportation is established over the San Francisco-Oakland Bay bridge in 1938, have been given an extension of life by being made an important agency in the transportation of people from the mainland to Treasure Island, where the Golden Gate International Exposition will be held in 1939. Ferries will be used because exposition engineers concluded that it would be impossible to use the bridge for the mass movement of visitors because of the geographical location of the island and because it would be impossible to stop trains on the bridge for the loading and unloading of the large number of passengers.

Following a recommendation of its engineers that it would be desirable that mass transportation be handled by a single operating company, the exposition entered into an agreement with the Key System under which it will perform service between San Francisco and Oakland and the island. In addition the Key System has agreed to negotiate with the Southern Pacific Company and Southern Pacific-Golden Gate Ferries, Ltd., for the acquisition of additional equipment and facilities. Final details of the plan have not as yet been worked out but construction of an $800,000 ferry passenger terminal system on Treasure Island is now virtually completed. Three ferry slips on the San Francisco side and a single slip on the Oakland side of the island are already finished. Work on the terminal building and the ramps, which will carry passengers over the six-lane automobile highway, is in the final stages.

Tentative plans call for the movement of exposition visitors from San Francisco from the Ferry building to ferry slips on the west side of Treasure Island. From metropolitan Oakland, two alternative plans have been offered, the first calling for passenger ferry service to and from the Key System pier terminal, and the second providing for the construction of a metropolitan Oakland Exposition terminal at Fortieth street and San Pablo avenue.

Polish Railway Program Gains Momentum

The Polish State Railways has been pushing energetically its program to construct several vital links in its network, accompanied by suburban electrification projects. Recently a new 60-kilometer (37-mile) line was opened between Sierpc and Brodnica. To effect this construction, the Polish system utilized for the first time a track-laying machine. The track was assembled in sections at two key points and carried to the location on a six-car construction train in lots of 24 sections. On a schedule of two deliveries of track per day, the laying of 1,800 meters (5,904 ft.) per day was attained.

Immediate action will be taken on the construction of an important link between Wieliszew and Nasielsk, a distance of 25 kilometers (16 miles), completion of which is expected next year. This new construction will constitute an extension of the Tluszcz-Wieliszew line, located immediately north of Warsaw, which constitutes the most direct freight route between Gdynia, Danzig and northwestern Poland and the northeastern and eastern sections of the country. Completion of the route will serve to relieve congestion on the Warsaw division. There is also planned a new line between Radom and Ostrowiec, via Ilza, which will afford a direct line from Warsaw to the newly-developed industrial district of Sandomierz.

Electrification projects now being carried out total 172 route-kilometers (107 miles), all of which are on Warsaw suburban lines. A total of 122 kilometers (69 miles) of line have already been electrified in the Warsaw suburban area, including the routes to Zyrardow, Otwock and Minsk Mazowiecki. Rolling stock built for service on these lines is of the rapid transit type, outfitted with pneumatically-operated doors, and the station platforms along the route have been raised to car-floor level to facilitate loading and discharging.

Freight Car Loading

Loading of revenue freight for the week ended November 27 totaled 558,627 cars, a decrease of 88,624 cars, or 13.7 per cent, below the preceding week, a decrease of 121,673 cars, or 17.9 per cent, below the

corresponding week in 1936 and a decrease of 142,423 cars, or 20.3 per cent, below the same week in 1930. All three years include the Thanksgiving holiday. All commodity classifications except coke showed decreases under the preceding week, while all commodity classifications except grain showed decreases under last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading

For Week Ended Saturday, November 27 Districts	1937	1936	1935
Eastern	116,796	146,042	127,703
Allegheny	102,027	138,517	112,147
Pocahontas	38,510	52,846	39,932
Southern	85,652	102,346	83,791
Northwestern	66,251	78,024	66,953
Central Western	98,197	104,365	89,686
Southwestern	51,194	58,160	51,666
Total Western Districts	215,642	240,549	208,305
Total All Roads	558,627	680,300	571,878
Commodities			
Grain and Grain Products	32,917	30,984	30,154
Live Stock	12,362	15,945	13,028
Coal	121,005	151,545	120,276
Coke	6,837	11,209	7,777
Forest Products	25,117	32,581	25,955
Ore	9,358	13,369	8,811
Merchandise L.C.L.	134,622	145,764	137,640
Miscellaneous	216,409	278,903	228,237
November 27	558,627	680,300	571,878
November 20	647,251	789,772	647,924
November 13	689,614	784,980	629,728
November 6	732,145	759,615	654,947
October 30	771,655	814,514	681,998
Cumulative Total, 48 Weeks	35,683,801	33,285,658	29,181,612

In Canada.—Car loadings for the week ended November 27 totaled 52,660, as compared with 51,521 for the corresponding week last year and 54,009 for the preceding week, according to the weekly statement of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
November 27, 1937	52,660	30,760
November 20, 1937	54,009	25,790
November 13, 1937	54,597	26,355
November 21, 1936	51,521	28,094
Cumulative Totals for Canada:		
November 27, 1937	2,406,847	1,252,663
November 21, 1936	2,244,626	1,100,214
November 23, 1935	2,144,830	1,002,613

Mexican Railways to Remain National Property

Following the expropriation of the properties of the National Railways of Mexico by the government under the recent presidential decree, as outlined in the *Railway Age* of July 31, page 144, the employees of the railway have been negotiating with the government for control of the properties. In a statement made to the employees, Juan Gutierrez, general secretary of the Union of Railroad Workers, stated recently that the government has no intention of turning the ownership of the railways to the workers, who will, instead, merely manage them under the terms of the recent decree.

Gutierrez recently approached the chief executive with the request that the railways be turned over to the employees at once, without waiting for the completion of the long process of inventory. He stated that the President was inclined to agree, with the understanding that arrangements be made to guarantee payment to the stockholders, to maintain a specified operating ratio, and to set aside a fund for maintenance of equipment and general improvement. The workers are now conducting conferences with the secretary of foreign relations and the secretary of the treasury to work out a plan in accordance with this understanding.

Gutierrez stated that the man who will head the proposed "autonomous department of railways" will have duties similar to those of the present executive president. He will be assisted by six men whose duties will approximate those of the present superintendent of transportation, superintendent of motive power, traffic manager, general accountant, chief engineer and chief of the statistical bureau. Gutierrez said further: "The main feature is to insure and guarantee the workers' rights and safeguard them against future difficult situations, should a new government with different ideals and inclinations choose to ignore the present railroad contracts." It is expected that the new management will begin functioning in January, 1938.

French Transport Board Set Up

To facilitate co-ordination of various forms of transport, the accomplishment of which the French government announced it would seek, coincident with the unification of the French main-line railroads by decree of August 31 (see the *Railway Age* for September 4, page 319), an official Board of Transport (Counseil Superieur des Transports) has been organized to deal with general transport matters. The duties of the group will consist largely in the preparation of plans for effecting consolidation and the organization of railway and highway co-ordination, all of which are to be submitted to the Ministry of Public Works.

To give representation to transport management, labor, shippers and government administrators, it is decreed that the body will compose 18 seats for management—eight representatives from the National Railways Company, one from the short line carriers, one from coast-wise water transport companies, and one from airways interests; nine seats for labor, one member for each group of non-rail transport and four members from the national railroad system; 27 representatives of transport patrons, including industry, agriculture, tourists and commercial travelers, and commercial municipalities; and 27 representatives of various government bodies. Thus the board will comprise 81 members in all, all of whom are appointed for terms of five years.

The board may, with the permission of the Minister of Public Works, submit certain questions to a permanent body of experts, entitled "Commission Permanente Generale." The decisions of this body are then submitted to the Board of Transport and eventually to the Minister of Public Works and other ministers concerned. The membership of the permanent commission is to comprise the president and vice-presidents of the Board of Transport, four representatives of transport management groups, one nominee of labor, five representatives of the public, and five government officers (the director of roads, the director of navigable streams and ports, the director of commercial shipping, the director of commercial aviation and a representative of the Minister of Finance).

The new transport administration will also include a "Secretariat General" to carry on routine business.

I. C. C. Prescribes Motor Carrier Accounting Systems

The Interstate Commerce Commission has adopted orders prescribing for Class I motor carriers, both bus and truck, accounting systems to be put into effect on January 1, 1938. Class I carriers are those having average gross revenues of $100,000 or over annually for the 3 years preceding the effective date.

The commission, the notice says, "regards it as unwise to impose accounting systems on the smaller Class II and III carriers until it has funds which will permit it to appoint and locate in the field offices of the Bureau of Motor Carriers accountants who can advise and help the carriers put such systems into effect and until it is satisfied that the system which it contemplates for the Class III carriers is sufficiently simple to be practicable. It is believed, however, that the larger Class I carriers can comply without much difficulty with the requirements proposed, and it is known that many of them now have very similar systems in effect."

The classifications prescribed differ in the treatment of some matters from the railroad classifications which the commission has prescribed. "It is deemed desirable to find out how these differences will work out in actual practice, and it is realized that experience may show need for changes as to these and other matters," the notice continues. "The results will be watched as carefully as possible. The *unit* instead of the *group* plan of depreciation has been temporarily adopted for certain classes of property for practical reasons, but this is not to be regarded as an abandonment of the *group* principle which the commission has followed in prescribing depreciation accounting for other carriers. It is probable that in time the group plan will be adopted for motor carriers as well."

Report Deplores Losses of British-Owned Argentine Roads

Severe censure of the treatment of the British-owned carriers in Argentina by the National Government of that country and an analysis of the railroads' position between the complementary millstones of fixed rates and mounting expenses and monetary exchange losses characterize the Report on Economic Conditions in the Argentine Republic published recently by the British Department of Overseas Trade and summarized in "Modern Transport" (London). In explanation of the unique factors involved in the financial position of the private Argentine carriers, the report points out that the roads are not permitted to buy so-called exporters' exchange at a fair rate and, in consequence, suffer heavy losses in pound sterling remittances for imported equipment and supplies and interest payments to British securities holders. These losses, the report

adds, cannot be recouped from an increase in revenues, but must be borne by the shareholders. Furthermore, the roads actually contributed 70,000,000 pesos (approx. $23,100,000 at current rate of exchange) to the government's exchange profits between November, 1933, and the end of 1936.

Considering the strong opposition to recent appeals of the British-owned carriers for increased freight rate tariffs on certain commodities, the report points to "the ignorance that overshadows Argentine popular conceptions in these matters" and protests that "it does very much look as if the railways were being denied the right to share in the present prosperity, apart from being hotly criticized for failing to modernize their equipment, often by the very people whose wealth the private railways created and whose opposition is partly responsible for the difficulty of finding the means to bring about the desired reforms."

Commenting on the low rate of return on capital invested in the British-owned Argentine roads, the report reveals that while Argentine Government bonds yield 3.9 per cent, an average return of but 1.6 per cent is enjoyed on the total railway investment of £277,000,000 ($1,368,380,000). The warning is sounded that new capital for badly-needed replacements and deferred maintenance will not be attracted unless some solution to the problem is found, pointing out that at present the British-owned companies have fallen 75 per cent below normal in equipment renewals.

The largest of the British carriers in the country are the Buenos Ayres & Pacific (2,806 route-miles), the Buenos Ayres Great Southern (5,085 route-miles), the Buenos Ayres Western (1,930 route-miles), the Central Argentine (3,700 route-miles) and the Cordoba Central (1,218 route-miles).

Ontario Board Hears Plea for Highway Rate Control

That regulation should be established for the rates and conditions of service of highway buses and trucks operating in Ontario to bring about some conformity with restrictions on railroads was the contention of railway and railway labor executives arguing before the Chevrier Royal Transport Commission at Toronto, Ont., last week. Appointed to investigate the pros and cons of provincial regulation of road transport, the commission, composed of non-official non-partisan members, has been holding hearings for all parties concerned.

Speaking for the rail carriers, J. A. Argo, chief, tariff bureau, Canadian National, Montreal, Que. suggested that a rate-control system be set up to cover both railroad and highway transportation, pointing out that, while railroad rates are subject to the approval of the Board of Railway Commissioners, Ontario truck tariffs are not published or filed and "we have no way of knowing what motor truck companies are charging as rates." He inveighed particularly against the fact that the railway must "make the same rate for all shippers while others are able to make different rates for different shippers."

Protest against the inequality between working conditions and wages of railway employees and those of bus and truck operators made up the major argument of the brief presented by the Affiliated Railwaymen's Organizations of Ontario. It was contended that lower wage scales and longer working hours in motor transport enabled the highway companies to offer a rate to shippers lower than is possible for the regulated railroads. "Once more the railways are penalized by the exploitation of the employees of a competing agency of transportation." Specifically, the employees' organization advocated rigid regulation of weights and measurements of road vehicles and the employment of two men for the operation of trucks over a certain tonnage.

Railway labor's sentiments were also sounded by Arthur Roebuck, counsel for the Canadian Brotherhood of Railway Employees, automotive transport section, who, referring to efforts to raise working standards in the trucking and motor bus industry, declared: "We are trying to attain the railway wage standard for our men—sort of an ideal, as it were."

Hearings of the commission continued this week. Upon adjournment at Toronto, the body will remove to Ottawa, Ont., for further sessions.

Eastern Snow Trains to Ply the Rails Once More

Railroads leading out of New York are once more announcing the operation of ski trains for lovers of winter sports. Most of the former runs are to be resumed, while several additions to the fleets are planned. As heretofore, there are two main classes of snow train services—one, the Sunday excursion, and, secondly, the week-end or winter sports "cruise."

The current winter sports season of the New Haven will start December 31, when the "Ski-Meister" leaves New York for northern New England. Its schedule calls for a departure from Grand Central terminal every Friday night with return Monday morning at 6:50. In addition, a new train entitled the "Eastern Slopes Express" will leave New York every Friday evening for Plymouth, N. H., North Conway and Intervale for the Mt. Washington and eastern slopes territory. This train will also start December 31 and operate during January, February and March. A fleet of one-day Sunday snow trains will also be placed in servce during the season, including the "Snow Clipper" running to Pittsfield, Mass., the "Snow Express" carrying ski parties to Great Barrington, Mass., and South Lee, on the Pittsfield line and the "Snow Special" scheduled to Norfolk, Conn., the destination of the New Haven's first snow train in January, 1935.

The first snow train of the New York Central, carrying all-Pullman de-luxe equipment, will leave Grand Central terminal on the evening of December 26 for the Laurentian mountains in Canada, arriving on Monday morning, December 27. The return trip will be made Sunday evening, January 2. This road, which last year carried 33,000 passengers on snow trains, will also operate one-day and week-end trips to the Adirondack mountains, the Catskills and the Hudson river highlands in New York state, the Green mountains and the Berkshires in New England, and Quebec, Que., subject to snow and other conditions. Its snow train program will commence on a large scale on New Year's Eve when inexpensive runs will be made to Gore mountain in the New York Adirondacks and Phoenicia, N. Y., in the Catskills. Return will be made January 2.

The New York Central has established a "log cabin ski bureau," in Grand Central terminal for the accommodation of skiers in the New York metropolitan area desirous of making hotel and Pullman reservations in advance. Winter sports experts will also supply weather and trail information for all points served by the roads and are equipped to handle ski insurance and storage problems.

The Lehigh Valley, commencing January 9, will operate ski trains to Weatherly, Pa., a new winter sports center, and will continue operation every Sunday during the winter season. The train will carry a dining car. Round trips cost $2.50. The Delaware, Lackawanna & Western, also commencing January 9, will operate ski trains to Pocono Summit, Pa., every Sunday, except that following Lincoln's Birthday, during the season. From Pocono Summit bus connections will be available to Pocono Manor Inn. The cost of the round trip is $2.

The Erie will operate both one-day and week-end excursions as soon as weather conditions are satisfactory. Sunday trips will be operated to High Point State Park, N. J., via the Port Jervis (N. Y.) station. The round trip fare is $2.50. Special week-end all-expense winter sports trips will be operated to Montague, N. J., leaving Friday afternoon and returning late the following Sunday. The total cost of transportation, sports equipment rental, meals and lodging, is placed at $13.50. A coffee shop car will be carried on all snow trains.

In connection with its winter sports program, the Central Vermont has issued for distribution a new winter sports booklet to further its three-year-old campaign to bring visitors to Vermont resorts. The booklet will be distributed by Central Vermont, Canadian National, New Haven and Pennsylvania railroad agents and ticket offices in the principal cities of New England, New York, Pennsylvania and other Atlantic seaboard states. Over 8,000 copies were distributed this week at the North American Winter Sports Show in Madison Square Garden, New York. Entitled "When the Green Mountains Turn White", the booklet has a general color scheme of green and white. Its contents include halftone reproductions of action and scenic pictures made in the snow country of Mt. Mansfield, Vt., and complete train and plane schedules.

Commissioners Discuss Competitive Rates

Discussions of Interstate Commerce Commission problems in connection with rates of competing rail and motor carriers are found in the four opinions recently

made public in I. & S. No. 4281 wherein the majority report found justified proposed reductions in rail rates and changed carload minima on refined petroleum products in tank car loads from marine storage in the Seattle, Wash., and Portland, Ore., groups to certain destinations in eastern Washington and northern Oregon. The plan of the railroads is to establish in lieu of the present single set of rates, which are subject to the full shell capacity of the tank as minimum, two sets of truck-competitive rates—one with a 5,000-gal. minimum and the other with an 8,000-gal. minimum.

The majority report, written by Commissioner Mahaffie, held that "the question of what differential, if any, should be maintained between the rail and truck service is not in issue in this proceeding." Also, that the "reasonableness of the proposed rates has been affirmatively established by respondents by the usual criteria, earnings, cost of service, and rate comparisons."

Commissioner Eastman, in a separate concurring opinion, asserted that the case presented "an issue which is of great general importance and calls for the best thought that we are able to give it." He referred to "the competition between rail and motor carriers and what we can and should do to control such competition in the public interest." The plan of making the "value of service" an important factor in the construction of rail rates, he continued, presents "obvious dangers" as competition increases and becomes widespread. These dangers, he added, have been realized with respect to the "relatively high" rates involved in the present case. But, Mr. Eastman finds that the proposed lower schedule would provide "amply remunerative rates from which the railroads can expect to earn a good profit."

Noting that the commission has not prevented motor carriers from establishing rates which it appeared would be profitable, merely because rail carriers feared injury and objected, he observed that the railroads, too, are "entitled to have their 'inherent advantages' preserved." And while Mr. Eastman believes that the commission is justified in preventing competitive rate reductions when the cariers proposing such reductions will not gain financially therefrom, he sees no evidence in the present case which warrants the conclusion that the railroads would not gain something.

Commissioner Porter, in a dissenting opinion in which Commissioner Lee joined, objected to the dual minima "in the absence of any evidence of a material difference in the quality or cost of the service." He thought it unlikely that "the trucking companies will sit idly by" and thus it seemed to him "reasonably certain that we have here the beginning of a rate war which in all probability will be hurtful to both forms of transportation."

Commissioner Caskie, in another dissent in which Commissioner Rogers joined, expressed the view that the reductions would lead the truckers to cut their rates "with consequent diminution of the revenues of respondents and of protestant tank-truck operators, and probably of other railroads and tank-truck operators."

"Respondents," Mr. Caskie continued, "are before us now in Ex Parte No. 123 alleging that they are and for the past several years have been operating under schedules of rates, fares and charges for the transportation of freight and passengers that have not yielded and do not now yield them sufficient revenue over and above their operating costs to insure their ability to continue in the public interest the adequate and efficient service contemplated by section 15a of the act. In that petition they ask that we permit an increase of 15 per cent in the rates they seek in this proceeding to reduce by 10 per cent. Respondents' position in the instant proceeding and the allegations made by them in the pending proceeding in Ex Parte No. 123 obviously are incompatible."

New Rail Car for a Short Line

A standard automotive-type gasoline motor, connected with all four wheels of the rear truck, propels this rail-car, recently placed in service by the Mississippi & Skuna Valley. Built by the Kalamazoo Railway Supply Co., it carries 28 passengers and five tons of mail, baggage and express.

Equipment and Supplies

Frisco Improvement

Authority to spend $1,696,715 on improvements to its lines in 1938 is sought in an application filed by the St. Louis-San Francisco in the United States district court at St. Louis. The program provides for improvements to locomotives and passenger and freight train cars, the widening of banks and fills, bank protection, new rails, ballast, bridges, trestles, culverts, additional tracks, signals, stations, and office and shop buildings. Among the proposed expenditures is one for $5,627 to equip 40 work cars with shower bath facilities for workmen. In seeking authority for this expenditure, the trustees said that numerous complaints have been made by employees as to the lack of bathing facilities on the cars and that the shower baths would increase efficiency by improving sanitary conditions. The application also said that installing the shower baths would lessen the possibility of employees filing complaints before governmental bodies, which complaints may require more funds to satisfy than the bath equipment.

FREIGHT CARS

THE SOUTH MANCHURIA RAILWAY contemplates buying 1,000 gondola cars, 500 box cars and 500 flat cars, all of 30 tons' capacity. This company has offices in New York at 60 East 42nd street.

PASSENGER CARS

GULF, MOBILE & NORTHERN—The American Car & Foundry Co. has delivered a third "Rebel" streamlined train to the Gulf, Mobile & Northern, for operation on its overnight route between Memphis, Tenn., New Orleans, La., and Mobile, Ala. Two previous streamlined units, designed and built by the American Car & Foundry Co., have been in operation now for over two years. This third train consists of one power car with mail and baggage compartments; and two combination day and sleeping coaches; each coach is divided into four compartments. The front compartment is for twelve colored passengers and is supplied with reclining-back aluminum frame seats upholstered in red leather. The adjacent compartment for eight passengers can be used for either white or colored passengers, as occasion demands. A vestibule separates the main white coach compartment, accommodating 20 passengers and equipped with reclining back aluminum frame seats attractively upholstered. The sleeper compartment has six sleeper sections, each with full size reclining back seats for day use, and lower berths for night travel. Air-conditioning is supplied throughout the passenger car and individually to each berth through a separate control.

IRON AND STEEL

THE SOUTHERN PACIFIC has ordered 9,420 tons of controlled cooled carbon steel rails

from the Bethlehem Steel Company for the Texas & New Orleans, including 8,800 tons of 112-lb. and 620 tons of 131-lb. rails.

THE NORTHERN PACIFIC has placed orders for 30,000 tons of rail, divided among the following companies: Carnegie-Illinois Steel Corporation, 20,000 tons; Bethlehem Steel Company, 9,000 tons and the Colorado Fuel & Iron Company, 1,000 tons.

THE ATLANTIC COAST LINE heading a group of southern railways which recently placed an order for 40,000 tons of rail as was reported in the *Railway Age* of December 4, page 815, has ordered an additional 10,000 tons of rail from the Bethlehem Steel Company.

Supply Trade

American Lumber & Treating Company Takes Over Plant

The American Lumber & Treating Company has taken over the operation of the treating plant of the Central of Georgia at Macon, Ga., under a long-term lease which provides that the treating company will treat the ties and timber for the Central of Georgia and will also handle other commercial business. For the present, treatment at Macon will be confined to creosote, although an additional treating unit will soon be added for pressure treatment with Wolman salts. In accordance with the policy of the American Lumber & Treating Company of performing a treating service only, it will not itself sell treated timber, but will co-operate with the merchandisers of timber in treating it preparatory to use.

Stanley M. Hunter, who has been associated with the **American Hoist & Derrick Company,** St. Paul, Minn., for the last two years, has been appointed manager of sales.

Eastern Railway Supplies, Inc., W. E. Bugbee, manager of sales, 110 East 42nd street, New York City, has been appointed sales representative of the **Philadelphia Steel & Wire Corporation,** Philadelphia, Pa.; **Adrian A. Walker** and **W. F. Weber,** 100 South Jefferson street, Chicago, have been appointed sales representatives in that territory.

George Howard Ritchie, chief engineer of the transportation department of the **Tennessee Coal, Iron & Railroad Company,** has been promoted to general superintendent of that department, with headquarters at Birmingham, Ala., succeeding **Henry Joseph Wurtele,** who has joined the Birmingham Southern as vice-president. **Oliver R. McIlhenny,** roadmaster, has been appointed assistant superintendent and chief engineer of the transportation department of the Tennessee Coal, Iron & Railroad Company.

John F. MacEnulty, vice-president in charge of sales of the **Pressed Steel Car Company, Inc.,** Pittsburgh, Pa., was elected president and a member of the board of directors, and **George H. Flem-**

John F. MacEnulty

ing, who had served as director and vice-president in charge of the Pittsburgh office, was elected executive vice-president, at a meeting of the board on December 3. Mr. MacEnulty began work with the Pressed Steel Car Company in February, 1899. He was appointed engineer of construction in 1903, and the following year was transferred to the New York sales department. In 1907 he was appointed general superintendent of the Western Steel Car & Foundry Co., a subsidiary of the Pressed Steel Car Company, and two years later, was appointed general manager of the same company. In June, 1912, Mr. MacEnulty was appointed sales manager of the Pressed Steel Car Company and subsidiaries, and from January, 1916, served as vice-president and a director until its recent reorganization, when he became vice-president in charge of sales of the reorganized company, the Pressed Steel Car Company, Inc.

Ernest P. Waud, vice-president of the **Griffin Wheel Company,** Chicago, has

Ernest P. Waud

been elected president, to succeed **Frank L. Whitcomb,** who has been elected vice-chairman of the board of directors. Mr. Waud was educated at St. Paul's school, Garden City, Long Island, N. Y., and Cornell University. He entered the employ of the Griffin Wheel Company in 1905 as inspector of chilled railroad car wheels and was later appointed chief inspector, department manager and assistant treasurer. In 1919 he was elected a vice-president, which position he has held until his recent election.

Mr. Whitcomb has been associated with the Griffin Wheel Company since 1889. He

Frank L. Whitcomb

was elected president in 1913, succeeding Thomas A. Griffin, who was the founder and first president of the company.

OBITUARY

Overton Bernard Capps, district sales manager of The Standard Stoker Company, Inc., with headquarters at Baltimore, Md., died on December 4, at the age of 57 years in the Protestant Hospital, Norfolk, Va., after an illness of six months. Mr. Capps began his business career in 1899, with the American Locomotive Company at Richmond, Va. From 1910 until the time of his death, he was actively engaged in sales work with the Locomotive Stoker Company and The Standard Stoker Company, Inc.

Charles Gilbert, vice-president and treasurer of the Scullin Steel Company, St. Louis, Mo., died on December 1 of a heart ailment. He entered railway service as a clerk with the former Union Depot Railroad Company, which was owned by the late John Scullin, at that time president of the Scullin Steel Company. Later he became confidential adviser to Mr. Scullin and was active president of four companies, of which Mr. Scullin was the chief stockholder. These companies, which have since been liquidated, were the Missouri & North Arkansas Railroad, the New Staunton Coal Company, Livingston, Ill., the Briquette Fuel Machine Company, Kansas City, Mo., and the Standard Briquette Company, Kansas City. In 1928, Mr. Gilbert was elected vice-president and treasurer of the Scullin Steel Company and a member of the board of directors of the Boatmen's National Bank.

Construction

ALABAMA GREAT SOUTHERN.—A contract has been awarded to Fairbanks, Morse & Company for the design and construction at Attalla, Ala., of a 300-ton capacity reinforced concrete locomotive coaling station with sand handling facilities.

ATCHISON, TOPEKA & SANTA FE.—The Elkhart & Santa Fe has applied to the Interstate Commerce Commission for an extension from January 1, 1938, to January 1, 1940, of the time limit for completion of its proposed 110-mile line between Felt, Okla., and Colmor, N. M. The 35.3-mile section between Farley, N. M., and Colmor remains to be completed.

CENTRAL OF NEW JERSEY.—The contract let to the Centaur Construction Company, Inc., New York, at a cost of about $289,171, for part of a grade crossing elimination project at Elizabethport, N. J., and reported in the *Railway Age* of November 20, page 743, includes the construction of Bridge 9/69 over the new Fourth street underpass, main line and Newark Wye; Bridge 9/65, Newark and Elizabeth branch; Bridge 9/60 New York Wye, together with highway and miscellaneous construction at Elizabeth, N. J.

ERIE.—A contract has been awarded to the Dresser Company, Cleveland, Ohio, for the work of installing an engine-washing platform, foundations for an ash-handling plant, water cranes and other facilities at Meadville, Pa., this work being incident to the rearrangement of the engine terminal leads.

LONG ISLAND—Bids have been asked for December 29 by this road for grade crossing elimination work at Lynbrook, N. Y.

NEW YORK CENTRAL.—In connection with its extensive West Side Improvements in New York City, this road has let contracts for work as follows: To Yonkers Nursery, Inc., Yonkers, N. Y., for landscaping work between West 100th street and St. Clair place; to H. Z. Altberg, Inc., New York, for the installation of electric conduit system for park lighting in Riverside Park, between West 83rd and West 100th streets; to the Immick Company, Inc., Meriden, Conn., for constructing paths and paving of promenade and playgrounds, steps, etc., in Riverside Park, between West 83rd and West 100th streets.

UNION PACIFIC.—Work is now under way on the construction of a bridge across the Los Angeles river at Los Angeles, Cal., which will provide a connection between the main tracks of this company on the east bank of the river and the trackage of the Los Angeles Union Passenger terminal on the west bank. The substructure of this bridge is being built under contract by L. W. Odell, Los Angeles, work on this portion of the project having commenced on November 2. The American Bridge Company has the contract for the fabrication and erection of the bridge steel. This structure consists of a three-span single-track, through plate-girder bridge on a 10-deg. curve, the center span being 119½ ft. long and the outside spans each 100 ft. long. The estimated cost of the structure is approximately $270,000.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Equipment Trust Certificates.*—This road has applied to the Interstate Commerce Commission for authority to issue $3,900,000 of 2¼ per cent equipment trust certificates, maturing $390,000 annually from December 15, 1938, to December 15, 1947. It is proposed to invite bids for the issue.

CHICAGO, BURLINGTON & QUINCY.—*Abandonment.*—This road has applied to the Interstate Commerce Commission for authority to abandon its 20.59-mile line from Koyle, Iowa, to Cainsville, Mo.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Reorganization.*—The Interstate Commerce Commission, Division 4, has postponed the hearing on the reorganization of this company from December 14, to February 8, 1938.

DENVER & RIO GRANDE WESTERN.—*Trustee Certificates.*—Trustees of this road have applied to the Interstate Commerce Commission for authority to issue $1,800,000 of four per cent certificates of indebtedness, Series E.

DULUTH, SOUTH SHORE & ATLANTIC.—*Abandonment.*—Trustees of the Mineral Range have applied to the Interstate Commerce Commission for authority to abandon the 16.05-mile branch from Keweenaw Bay, Mich., to Alston.

GREYHOUND CORPORATION.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue, subject to prescribed conditions, $1,368,300 par value 5.5 per cent preference stock to be distributed as a stock dividend; and 68,415 shares of common stock to be used for the conversion of the above preference shares. The company has also been authorized to issue not exceeding 133,228 shares of no-par common in exchange for 14,274.5 shares of Atlantic Greyhound Corporation common.

ILLINOIS CENTRAL.—*R.F.C. Loan.*—The Interstate Commerce Commission, Division 4, has approved the extension of the time of payment, for a term ending not later than June 1, 1939, of a loan of $7,758,000 to this company from the Reconstruction Finance Corporation, maturing on December 7.

LEHIGH VALLEY.—*Bonds.*—The Interstate Commerce Commission, Division 4, has modified its order of November 3 so as to permit this company to pledge and repledge from time to time, to and including December 31, 1939, all or any part of $1,000,000 of general consolidated mortgage 5 per cent bonds, due 2003, and such additional amounts of like bonds as may be required to maintain the pledging ration requested, as collateral security for a promissory note or notes in the sum of $500,000 to the order of the Marine Midland Trust Company of New York or for any renewal thereof.

LOUISIANA & ARKANSAS.—*Acquisition of R. I. A. & L.*—The Arkansas Corporation Commission has withdrawn its intervention in support of this proposed acquisition.

LOUISIANA & ARKANSAS.—*Intervention Granted.*—The Interstate Commerce Commission, Division 4, has authorized the Brotherhood of Railway and Steamship Clerks to intervene in the application of this company to acquire control of the Louisiana, Arkansas & Texas Pacific.

NEW YORK, NEW HAVEN & HARTFORD.—*Abandonment.*—The Interstate Commerce Commission, Division 4, has authorized the trustees to abandon 0.6 of a mile of line in Norwalk, Conn.

NEW YORK, NEW HAVEN & HARTFORD.—*Abandonment.*—Examiner Jerome K. Lyle of the Interstate Commerce Commission, in a proposed report to the commission, has recommended that it authorize the trustees of the Hartford & Connecticut Western to abandon a line extending from Collinsville, Conn., to Winsted, 11.3 miles. Examiner Lyle would also have the commission authorize the trustees of the New Haven to abandon operation of that part of the line extending from Pine Meadow, Conn., to New Hartford, 1.1 miles. Operation of the remainder of the line was abandoned in 1932 pursuant to an order of the commission.

NORFOLK SOUTHERN.—*Payment for lease.*—This road has settled with the Atlantic & North Carolina in federal district court at Norfolk, Va., to pay the latter, for use of its facilities from July 28, 1932, to November 15, 1935, (when the lease was disaffirmed), $100,000 in cash; $76,000 in A. & N. C. bonds; $28,000 (par value) in Goldsboro (N. C.) Union Station bonds; 50 shares of Goldsboro Union Station capital stock; 533 shares of A. & N. C. stock held by the N. S., and various physical properties and joint-facilities formerly held by the N. S. along A. & N. C. right-of-way.

WHEELING & LAKE ERIE.—*Initial Common Dividend.*—Directors of this company have declared a dividend of $5 on its common stock, the first ever declared.

Average Prices of Stocks and Bonds

	Dec. 7	Last week	Last year
Average price of 20 representative railway stocks..	32.81	33.00	54.93
Average price of 20 representative railway bonds..	67.21	66.65	83.62

Dividends Declared

Joliet & Chicago.—$1.75, quarterly, payable January 3 to holders of record December 20.

Lackawanna R. R. of New Jersey.—$1.00, payable January 3 to holders of record December 3.

Morris & Essex.—$2.13, payable January 3 to holders of record December 3.

New York, Lackawanna & Western.—$1.25, payable January 3 to holders of record December 10.

St. Louis, Rocky Mountain & Pacific.—25c; Preferred, $1.25, quarterly, both payable December 31 to holders of record December 15.

Wheeling & Lake Erie.—Initial, $5.00, payable December 18 to holders of record December 14.

Railway Officers

EXECUTIVE

R. H. Schultz, traffic manager of the Midland Valley, the Kansas, Oklahoma & Gulf and the Oklahoma City-Ada-Atoka, with headquarters at Muskogee, Okla., has been appointed vice-president of these companies.

Henry Joseph Wurtele, general superintendent of the transportation department of the Tennessee Coal, Iron & Railroad Company, has been appointed vice-president of the Birmingham Southern, succeeding **H. W. Smith,** who resigned last August. Mr. Wurtele was born on January 8, 1884, on the outskirts of Louisville, Ky., and was graduated in 1904 from

H. J. Wurtele

the University of Kentucky, where he received the degree of bachelor of civil engineering. At the completion of his college work, Mr. Wurtele was employed for several months on a surveying project for a traction line between Versailles and Frankfort, Ky. He spent two years with the Chicago & Alton at Springfield, Ill., going from that company to the Gary Works of the Indiana Steel Company at Gary, Ind. Mr. Wurtele was employed in the construction department of the Tennessee Coal, Iron & Railroad Company in 1907 and was appointed general superintendent of the company's transportation department on September 6, 1935.

FINANCIAL, LEGAL AND ACCOUNTING

T. S. Ford, secretary and auditor of the Des Moines Union Railway and auditor of the Iowa Transfer Railway, Des Moines, Iowa, has retired, after about 53 years' railway service, during which time he was connected in various capacities with a number of short-line railroads throughout the country.

J. C. Hahn has been appointed auditor miscellaneous accounts of the Central of New Jersey, as reported in the *Railway Age* of November 27. Mr. Hahn was born on March 25, 1887, at Philadelphia, Pa., and was educated in the graded schools of Philadelphia, Pa., and Pierce Business College, Philadelphia. He entered the service of the Central of New Jersey in the accounting department on May 28, 1902, and was appointed general bookkeeper on March 1, 1920. He became chief clerk to comptroller on June 1, 1920, the position he held until his recent appointment as auditor miscellaneous accounts, effective November 16.

F. W. Suhl has been appointed auditor passenger traffic of the Central of New Jersey, as reported in the *Railway Age* of November 27. Mr. Suhl was born on June 27, 1875, at Bayonne, N. J., and was educated in the public schools of Bayonne, N. J., and attended Cooper Union and Y.M.C.A. night schools. He entered the service of the Central of New Jersey in the accounting department on June 29, 1891, and was appointed chief clerk to the auditor passenger traffic on January 16, 1926. He became acting auditor passenger traffic on February 1, 1937, and his appointment as auditor passenger traffic became effective November 16.

W. H. Carpenter has been appointed assistant auditor disbursements of the Central of New Jersey, as noted in the *Railway Age* of November 27. He was born on October 22, 1885, in New York City, and was educated at Friends Seminary, New York. Mr. Carpenter entered the service of the Central of New Jersey in the engineering department on November 7, 1918, and was transferred to the accounting department as chief clerk to accounting engineer on March 1, 1920. He was appointed chief clerk to the auditor disbursements on February 16, 1933, the position he held until his appointment as assistant auditor disbursements on November 16.

F. E. Gregg, auditor miscellaneous accounts, Central of New Jersey, has been appointed assistant comptroller, as reported in the *Railway Age* of November 27. Mr. Gregg was born on December 4, 1880, at Lambertville, N. J., and was educated in the graded and high schools at Lambertville, N. J., and Temple University, Philadelphia, Pa. He entered the service of the Central of New Jersey on June 16, 1902, in the accounting department, and was appointed traveling auditor on February 1, 1907. On November 1, 1917, he became chief clerk to comptroller and on April 16, 1929, was appointed auditor miscellaneous accounts, the position he held until his recent appointment as assistant comptroller, effective November 16.

Philip M. Kelly has been appointed auditor of disbursements of the Central of New Jersey, as reported in the *Railway Age* of November 27. Mr. Kelly was born on July 3, 1895, at Marquette, Mich., and was educated in the public and high schools of Elizabeth, N. J., followed by evening courses at the Y.M.C.A. He entered the service of the Central of New Jersey on September 9, 1912, in the motive power department and was furloughed for military service on May 21, 1917. Returning to the service of the Central of New Jersey on June 19, 1919, he was appointed inspector, motive power department, on June 1, 1920. On February 9, 1925, he was appointed assistant chief clerk to general manager and became research engineer in the accounting department on February 1, 1926, the position he held until his recent appointment as auditor disbursements, effective November 16.

Frank V. Whiting, general claims attorney of the New York Central System, retired on November 30, and has been succeeded by **O. G. Browne,** assistant general claims attorney, as reported in the *Railway Age* of December 4. Mr. Whiting entered railroad service as a telegraph operator with the Lake Shore & Michigan Southern, now the western half of the New York Central's main line, on November 14, 1884. He remained in the operating department in various positions until after becoming a member of the bar, when he was appointed chief claims agent with the Lake Shore & Michigan Southern. In 1909, he was appointed claims attorney for the New York Central, two years later being promoted to the position of general claims attorney, which position he held until his retirement.

Mr. Browne has been in railroad service since 1894, starting also as a telegraph operator. He entered the service of the New York Central in 1897 and in 1903 he entered the claims department at Albany, serving successively at Utica, N. Y., Watertown and Syracuse. He was appointed claims attorney in 1917 and assistant general claims attorney in 1928, the position he held until his recent appointment.

Gilbert C. Reveille has been appointed auditor of disbursements of the Norfolk Southern at Norfolk, Va., as reported in the *Railway Age* of November 27. Mr. Reveille was born on September 3, 1892, at Norfolk and entered railroad service on

Gilbert C. Reveille

December 10, 1907, with the Norfolk Southern. He was appointed chief clerk in the bookkeeping department on July 1, 1920 and became auditor of receipts on May 17, 1937, the position he held until his appointment as auditor of disbursements, effective November 15.

Frederick George Hollender, assistant secretary and assistant treasurer of the

Northern Pacific at New York, has been appointed secretary and assistant treasurer, with the same headquarters, as reported in the *Railway Age* of December 4. Mr. Hollender was born on May 28, 1893, at New York, and entered railroad service in

F. G. Hollender

1912 as stenographer in the office of the local auditor of the New York, New Haven & Hartford at New York, serving in this capacity until 1913. He then served until 1917 as traveling secretary to the chairman of the New Haven at Boston, Mass., and from April to December, 1917, was secretary, Railroad War Board, Washington, D. C. From 1917 to 1925, Mr. Hollender served as secretary to chairman, Northern Pacific, at New York. He became assistant secretary and assistant treasurer of the Northern Pacific in 1925, the position he held until his recent appointment as secretary and assistant treasurer.

R. Marsden Smith, general attorney of the Baltimore & Ohio, has been appointed general solicitor at Baltimore, Md., as noted in the *Railway Age* of November 27. Mr. Smith was born in Baltimore on February 9, 1878, and was educated in

R. Marsden Smith

private schools of Baltimore, Johns Hopkins University, the University of Maryland and Harvard Law School. From 1901 to 1906 he was engaged in the general practice of law, entering the law department of the Baltimore & Ohio as assistant general solicitor in April, 1906. Mr. Smith has been general attorney since 1916, being connected with most of the larger litigation in the courts and before the Interstate Commerce Commission.

J. M. White has been appointed auditor of revenues of the Norfolk Southern and **Frank S. Cowan** has been appointed agent in charge of freight claims, as reported in the *Railway Age* of November 27. Mr. White was born on May 18, 1895, at Accomac, Va., and was educated at Fork Union Military Academy, Blackstone Academy, and Richmond College. He entered railroad service on June 16, 1914, with the Southern at Norfolk, Va. In July, 1916, he entered the service of the Norfolk Southern at Norfolk as clerk in the general claim department and was appointed claim adjuster on January 1, 1918, with headquarters at Raleigh, N. C. On January 1, 1925, Mr. White was appointed freight claim agent at Norfolk, the position he held until his recent appointment as auditor of revenues, effective November 15.

Mr. Cowan was born on September 16,

J. M. White

1897, at Norfolk, Va., and entered railroad service on June 30, 1914, with the Norfolk Southern. He was appointed chief clerk in the freight claim department on January 1, 1925, the position he held until his recent appointment as agent in charge of freight claims, effective November 15.

OPERATING

R. McKillop, superintendent on the Canadian Pacific, with headquarters at Brownville Junction, Me., has been transferred to the Calgary division, with headquarters at Calgary, Alta., to succeed **G. J. Fox,** who in turn has been transferred to Brownville Junction to succeed Mr. McKillop.

C. W. Page, assistant superintendent of the Omaha-Northern Kansas divisions of the Missouri Pacific, with headquarters at Atchison, Kan., hereafter will confine his jurisdiction to the Omaha division, with the same headquarters. **H. F. Kaho,** trainmaster-agent of the Omaha Terminals, Omaha, Neb., remains in that capacity without jurisdiction as trainmaster over the Lincoln district and that part of the Talmage district between Weeping Water, Neb., and West Side junction.

D. S. Thomson, assistant superintendent of the Bruce division of the Canadian Pa-

D. S. Thomson

cific at Toronto, Ont., has been appointed superintendent of the Trenton division, as noted in the *Railway Age* of November 27. Mr. Thomson joined the Canadian Pacific as messenger at the Augus shops, Montreal, in 1910, and after serving in other offices in Montreal, became statistician in 1925, chief clerk to the general manager at Montreal in 1926, and assistant superintendent at Smith's Falls, Ont., in 1935. He served in the same capacity at Sudbury, Ont., in 1936 and in the Bruce division in 1937.

J. F. Lewis, chief dispatcher on the Union Pacific at Marysville, Kan., has been promoted to trainmaster with the same headquarters, to succeed **G. J. Mulick,** who has been transferred to North Platte, Neb., to replace **E. B. Herdman,** who has resigned. These appointments became effective on December 1.

F. E. Sperry, assistant to the general manager of the Chicago, Burlington & Quincy, Lines East of the Missouri river, with headquarters at Chicago, has been promoted to general superintendent of transportation of the system, effective December 6, with the same headquarters, to succeed **John C. Roth,** whose death on November 29 was reported in the *Railway Age* of December 4.

John Hewes, Jr., transportation assistant on the Baltimore & Ohio, with headquarters at Pittsburgh, Pa., who has been promoted to superintendent of the Newark division, with headquarters at Newark, Ohio, as reported in the November 20 issue, is a native of Baltimore, Md., and was born on December 9, 1887. Following the completion of his education in the public schools he entered service with the B. & O. as an axeman in the engineering department in 1905, and during the following six years he held the positions of chainman, rodman, levelman and transitman. In 1914 Mr. Hewes was appointed bridge inspector, with headquarters at Cincinnati, Ohio, and in the following year he was advanced to assistant superintendent of the Ohio division, with headquar-

Continued on next left-hand page

MODERN TRAIN OPERATION REQUIRES . . .

One of Southern Pacific's famous "Daylight" trains.

. . . high starting power

PLUS

high horse power at high speed

Only modern steam locomotives can economically fulfill these requirements.

Modern steam locomotives, which incorporate proved capacity-increasing factors in their design, are capable of starting heavier trains and delivering a 25 to 30 per cent increase in ton-miles-per-train-hour.

This increased output spreads operating costs over greater tonnage and shows correspondingly increased net earnings.

LIMA LOCOMOTIVE WORKS, LIMA LOCOMOTIVE WORKS INCORPORATED INCORPORATED, LIMA, OHIO

ters at Hamden, Ohio. In 1916, he was assigned to the chief engineer's office as a draftsman, becoming a field engineer in

John Hewes, Jr.

1917, assistant engineer in 1918 and division engineer at Flora, Ill., later in the latter year. In 1925, Mr. Hewes was made assistant superintendent at Akron, Ohio, and four years later he was sent to Pittsburgh as transportation assistant, which position he was holding at the time of his recent appointment as superintendent.

ENGINEERING AND SIGNALING

L. C. Redmond, supervisor of telegraph of the Missouri Pacific, with headquarters at Sedalia, Mo., has retired at his own request after nearly 50 years' service.

F. W. Small, supervisor of bridges and buildings of the Illinois division of the Chicago & Eastern Illinois, with headquarters at Salem, Ill., has been promoted to division engineer of that division, with the same headquarters, effective December 1, to succeed **A. W. White,** deceased.

TRAFFIC

C. R. Zarfoss, secretary to the president of the Western Maryland, has been appointed industrial agent, with headquarters at Baltimore, Md.

Burris A. Talbert has been appointed agricultural agent of the Kansas City Southern, with headquarters at Kansas City, Mo., effective December 1, to succeed **J. F. Newsom,** who has retired because of ill health.

F. P. Sandford has been appointed general agent, freight department, for the New York Central System at Jacksonville, Fla., to succeed **V. M. Ousey,** who has been transferred to Memphis, Tenn., to replace **G. H. Johnston,** who has been appointed division freight agent at Grand Rapids, Mich. **G. T. Sullivan** has been appointed general agent, freight department, at Terre Haute, Ind.

J. E. Large has been appointed general agent of the Midland Valley, the Kansas, Oklahoma & Gulf and the Oklahoma City-Ada-Atoka, with headquarters at Los Angeles, Cal., to succeed **W. H. Andrews,** deceased. **J. E. Robinson,** acting general agent at Arkansas City, Kan., and **J. H. Woods,** acting general agent at Pawhuska, Okla., have been appointed general agents.

J. R. McClurken, general merchandise agent of the Louisiana & Arkansas, with headquarters at Shreveport, La., has been appointed assistant general freight agent, with headquarters at St. Louis, Mo., to succeed **S. S. Senne,** who has retired at his own request after 17 years service with this company. **H. N. Nunnally,** special representative at Shreveport, has been appointed assistant general freight agent at that point, in which capacity he will take over the duties formerly exercised by Mr. McClurken.

Burwell S. Merritt, general freight agent of the Great Northern, with headquarters at San Francisco, Cal., has been appointed western traffic manager, with headquarters at Seattle, Wash., to succeed **John F. Pewters,** whose death on November 17 was reported in the *Railway Age* of December 4. Mr. Merritt has been identified with the Great Northern for about 31 years. He was born on January 26, 1876, at Port Huron, Mich., and after a public school education he entered railway service on April 12, 1893, as an agent and telegrapher for the Flint & Pere Marquette (now part of the Pere Marquette). He served in this capacity and as a yardmaster until 1906, when he went with the Great Northern as an agent, later representing this road at various points in North Da-

Burwell S. Merritt

kota and Montana. In 1919 he was sent to Seattle, Wash., as station inspector, later holding the positions of traffic agent, general agent and assistant general freight agent at various points. Late in 1931, he was advanced to general freight agent, with headquarters at San Francisco, which position he was holding at the time of his recent appointment as western traffic manager.

James R. Moriarty, assistant general passenger agent of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, who has been appointed assistant passenger traffic manager with the same headquarters, as reported in the *Railway Age* of December 4, has been identified with the passenger traffic department of the Santa Fe for 25 years. He first entered the service of this company in 1912 in the division passenger agent's office at Chicago as a ticket seller, later serving at

James R. Moriarty

Los Angeles, Calif., and Kansas City, Mo., in the same department. He returned to Chicago in 1913 as city passenger agent, being appointed assistant manager of the consolidated ticket office at Chicago in 1918. Two years later he was appointed division passenger agent at the same point, and in 1936 he was made assistant general passenger agent, the position he was holding at the time of his recent appointment as assistant passenger traffic manager, effective December 1.

MECHANICAL

John Mattise, fuel supervisor on the Chicago & North Western, with headquarters at Chicago, has been appointed general air brake instructor with the same headquarters, to succeed **William J. Devine,** who has retired. Mr. Mattise has also been assigned to exercise general supervision over motive power lubrication.

OBITUARY

Harry C. Holden, assistant freight traffic manager of the Wabash, with headquarters at St. Louis, Mo., died at Cleveland on December 5 of bronchial pneumonia.

* * *

Photo by C. Parker

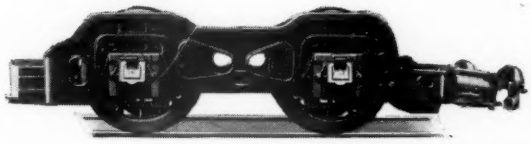
The New Haven's "Yankee Clipper" Leaving Boston, Mass.

Tables of Revenues and Expenses of Railways begin on next left-hand page

"Restful nights make Zestful days"

[THE BOOSTER CUTS OUT STARTING SHOCKS]

"Sister looks so fine this morning, Daddy, she has eaten all her breakfast and is lively as a cricket — you'd never know she had been on a train all night. Which reminds me, I didn't wake once either — did you?" » » » "No, I picked this train purposely — it is hauled by a Booster-equipped locomotive, which means smooth starting after every stop — no jars and jolts to keep you awake all night. That's why we all feel fine today." » » » Booster locomotives make boosters out of the passengers.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1937

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Akron, Canton & Youngstown	Oct.	171	$174,251	$33	$182,267	$25,651	$18,709	$10,882	$61,342	$125,391	68.8	$56,876	$51,001	$29,526	$57,639	$34,170
	10 mos.	171	1,737,631	463	1,844,076	270,596	182,880	101,576	566,056	1,212,538	65.8	631,538	515,875	301,195	395,835	346,252
Alton	Oct.	956	1,063,464	222,769	1,512,072	197,171	218,068	52,750	602,217	1,135,007	75.1	377,065	323,413	129,584	150,531	160,203
	10 mos.	956	10,216,444	2,000,235	14,172,342	2,031,758	2,204,034	503,847	5,418,080	10,814,716	76.3	3,357,626	2,493,629	709,898	261,301	1,007,251
Atchison, Topeka & Santa Fe System	Oct.	13,536	12,971,588	1,396,296	15,620,661	2,945,018	3,618,756	428,938	5,646,037	12,999,145	83.2	2,621,516	1,318,508	1,248,651	2,460,907	2,222,494
	10 mos.	13,505	117,474,935	14,802,766	143,742,352	23,449,258	33,113,272	4,440,772	51,619,680	116,721,540	81.2	27,020,812	16,481,337	15,805,892	13,350,565	25,333,763
Atlanta & West Point	Oct.	93	106,424	26,363	158,388	14,577	29,552	8,703	67,027	130,643	82.5	27,745	18,464	3,596	—1,465	12,056
	10 mos.	93	1,023,060	260,272	1,523,710	193,807	315,300	86,690	619,482	1,326,820	87.1	196,890	119,192	—18,607	—15,995	66,952
Western of Alabama	Oct.	133	102,325	25,516	145,499	21,699	31,997	7,959	59,488	130,754	89.9	14,745	2,012	4,157	7,534	16,064
	10 mos.	133	980,050	256,269	1,421,100	195,771	345,048	78,086	531,536	1,250,247	88.0	170,853	60,838	88,109	26,010	209,578
Atlanta, Birmingham & Coast	Oct.	639	260,105	8,224	299,407	47,251	52,770	24,271	116,200	266,453	89.0	32,954	10,074	—5,416	10,220	5,449
	10 mos.	639	2,621,864	172,195	3,122,819	504,425	551,753	240,767	1,198,748	2,763,275	88.5	359,544	143,976	—21,573	60,680	89,554
Atlantic Coast Line	Oct.	5,100	2,829,241	387,709	3,681,490	380,635	776,217	135,610	1,523,446	2,970,601	80.7	710,889	385,889	339,664	392,817	506,857
	10 mos.	5,102	29,263,982	6,757,074	40,297,984	4,058,071	7,737,752	1,400,654	15,481,591	30,450,239	75.6	9,847,745	5,672,745	4,558,990	3,403,228	6,244,693
Charleston & Western Carolina	Oct.	342	188,579	1,422	194,549	23,253	39,143	7,164	72,320	148,222	76.2	46,327	29,827	28,283	44,452	34,476
	10 mos.	342	2,056,093	12,288	2,121,988	269,042	350,557	70,483	681,808	1,431,664	67.5	690,324	478,824	427,748	369,230	489,756
Baltimore & Ohio	Oct.	6,450	12,552,603	1,062,321	14,518,066	1,449,868	2,759,254	436,682	5,474,035	10,741,624	74.0	3,776,442	2,905,394	2,456,860	3,456,674	3,064,849
	10 mos.	6,463	127,428,998	9,906,169	145,963,306	14,862,691	32,491,126	4,140,496	51,238,345	109,272,213	74.9	36,691,093	27,417,713	23,308,322	24,603,252	29,335,753
Staten Island Rapid Transit	Oct.	23	47,428	68,606	125,695	10,458	21,478	971	85,613	129,111	102.7	—3,416	—31,216	—36,320	—38,282	—28,902
	10 mos.	23	494,813	710,180	1,298,872	126,949	224,605	15,440	826,682	1,308,204	100.7	—9,332	—226,132	—288,632	—360,566	—214,452
Bangor & Aroostook	Oct.	603	499,567	13,767	533,245	81,920	101,333	5,648	130,322	347,293	65.1	185,952	136,390	143,033	175,316	164,845
	10 mos.	603	4,753,866	192,885	5,151,691	928,230	909,503	56,724	1,277,610	3,438,398	66.7	1,713,293	1,260,025	1,245,623	1,019,276	1,465,925
Bessemer & Lake Erie	Oct.	225	1,462,959	648	1,474,285	133,864	313,534	11,566	244,692	734,484	49.8	739,801	486,084	564,857	1,111,745	662,095
	10 mos.	225	16,377,538	8,016	16,524,587	1,403,141	3,030,598	128,093	2,405,458	7,334,101	44.4	9,190,486	7,157,453	7,692,685	5,840,392	8,538,313
Boston & Maine	Oct.	1,959	2,761,247	589,596	3,882,861	546,342	615,085	66,828	1,591,752	2,986,532	76.9	896,329	615,733	401,712	818,942	535,917
	10 mos.	1,960	27,744,031	6,284,078	39,562,630	5,189,427	6,221,017	666,481	15,154,812	29,038,108	73.4	10,524,522	7,509,881	5,537,852	3,176,675	6,880,101
Burlington, Rock Island	Oct.	255	104,843	20,608	134,369	22,627	24,530	5,311	57,225	120,855	89.9	13,514	6,526	—18,839	—231	—17,076
	10 mos.	255	895,466	161,724	1,138,602	175,321	161,839	48,472	505,553	977,451	85.8	161,151	102,328	—86,206	—252,621	—67,500
Cambria & Indiana	Oct.	37	126,194	.....	126,323	8,410	40,071	439	12,657	68,095	53.91	58,228	7,752	71,672	85,641	87,776
	10 mos.	37	1,081,315	.....	1,082,401	76,367	415,370	3,942	110,910	666,769	61.60	415,632	87,844	788,081	655,398	955,202
Canadian Pacific Lines in Maine	Oct.	233	119,903	11,716	143,995	47,920	29,993	9,261	55,793	148,229	103.0	—4,234	—11,567	—22,472	—20,145	—20,275
	10 mos.	233	1,700,724	151,163	1,982,298	340,296	438,494	96,154	714,676	1,656,618	83.6	325,680	238,238	48,674	—169,492	70,282
Canadian Pacific Lines in Vermont	Oct.	85	72,702	10,404	95,310	15,714	21,506	4,117	58,760	103,339	108.4	—8,029	—5,182	—26,977	—26,341	—26,977
	10 mos.	85	746,091	101,992	971,169	144,322	254,087	42,739	591,221	1,080,484	111.2	—109,315	—154,941	—364,350	—513,757	—364,350
Central of Georgia	Oct.	1,926	1,030,639	116,325	1,278,062	190,074	306,921	55,856	593,361	1,224,642	95.8	53,420	—34,898	—37,450	245,803	31,761
	10 mos.	1,926	11,407,367	1,257,755	14,187,199	1,959,166	3,031,777	551,643	5,799,558	12,162,651	85.7	2,024,548	1,134,478	882,181	897,383	1,545,342
Central of New Jersey	Oct.	678	2,277,543	379,305	2,849,518	210,733	516,876	45,076	1,176,899	2,047,735	71.9	801,783	421,528	273,159	264,049	391,752
	10 mos.	680	21,616,512	3,981,880	27,508,131	2,099,463	4,876,169	476,146	11,296,902	19,827,957	72.1	7,680,174	3,822,914	2,289,009	1,279,811	3,482,306
Central Vermont	Oct.	455	433,194	31,224	507,461	62,984	115,643	16,215	241,742	461,979	91.0	45,482	33,020	—5,875	—41,887	19,079
	10 mos.	455	4,512,939	395,868	5,360,561	753,640	983,604	152,940	2,453,061	4,568,269	85.2	792,292	582,332	211,280	—274,870	467,317
Chesapeake & Ohio	Oct.	3,105	11,517,244	346,513	12,315,190	1,119,542	2,028,531	199,519	2,741,666	6,400,819	52.0	5,914,371	4,831,002	4,873,205	6,323,889	5,565,873
	10 mos.	3,106	101,667,554	2,987,023	108,760,854	11,344,603	19,344,369	1,915,814	24,968,406	60,909,381	56.0	47,851,473	36,062,117	36,517,697	42,542,921	43,401,384
Chicago & Eastern Illinois	Oct.	930	1,161,531	119,061	1,450,488	170,030	233,053	60,102	560,925	1,089,641	75.1	360,847	310,847	192,688	267,547	244,667
	10 mos.	930	10,776,061	1,296,236	13,663,842	1,644,967	2,368,773	585,107	5,211,523	10,486,999	76.7	3,176,843	2,431,843	1,084,147	1,009,390	1,595,630
Chicago & Illinois Midland	Oct.	131	333,629	1,096	343,296	72,522	59,986	17,837	93,347	262,358	76.4	80,938	53,388	48,655	175,690	64,288
	10 mos.	131	3,170,114	12,035	3,274,202	361,126	672,666	174,436	829,582	2,220,888	67.8	1,053,314	757,786	717,809	941,014	859,625
Chicago & North Western	Oct.	8,400	6,553,521	931,307	8,312,669	1,085,725	1,550,983	187,788	3,351,693	6,505,090	78.3	1,807,579	1,246,634	976,549	1,885,325	1,401,155
	10 mos.	8,401	58,470,390	9,928,427	76,008,918	13,141,072	19,690,259	1,917,736	30,824,201	69,020,716	90.3	6,988,202	1,954,160	—45,119	3,293,475	4,122,226
Chicago, Burlington & Quincy	Oct.	8,975	8,102,870	805,101	9,840,989	1,332,256	1,435,793	227,855	3,437,744	6,720,486	68.3	3,120,503	2,178,746	1,741,360	2,332,464	2,153,935
	10 mos.	8,976	67,012,821	8,033,260	83,656,651	12,487,322	14,816,844	2,435,359	30,041,130	63,080,477	75.4	20,576,174	14,400,709	10,284,814	14,477,401	14,108,026
Chicago Great Western	Oct.	1,505	1,580,482	57,003	1,764,979	222,174	236,026	59,299	684,218	1,246,473	70.6	518,506	410,136	157,221	355,254	202,121
	10 mos.	1,505	14,247,637	469,651	15,719,068	2,513,099	2,491,823	593,665	5,981,550	12,122,786	77.1	3,596,282	2,663,697	589,548	1,576,138	1,033,546
Chicago, Indianapolis & Louisville	Oct.	575	704,760	54,831	834,928	92,718	239,443	29,748	338,150	738,698	88.5	96,230	53,789	—42,665	79,785	—6,054
	10 mos.	575	7,027,431	523,121	8,501,079	953,144	2,171,875	296,294	3,449,395	7,246,796	85.2	1,254,283	936,734	—9,804	293,152	339,732

Continued on next left-hand page

NO. 44 OF A SERIES OF FAMOUS ARCHES OF THE WORLD

PONSANOOTH VIADUCT

NEAR FALMOUTH, CORNWALL

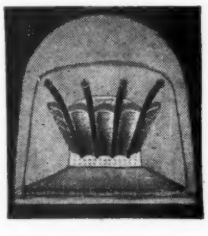
This viaduct of the Great Western Railway of England is built of masonry abutments, piers and spandrel walls. The arches are of brick and the parapet walls of re-inforced concrete. This structure replaced the timber viaduct, seen in the background, a relic of pioneer days of railroads in the west of England.

The viaduct consists of nine arches, each of 64 feet span. It is 660 feet long and 135 feet high. *Security Brick Arches for the locomotive firebox are designed for the individual class of locomotive in which they are to serve, by practical railroad men who have spent their lifetime in this work.*

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

REVENUES AND EXPENSES OF RAILWAYS

Month of October and Ten Months of Calendar Year 1937—Continued

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Chicago, Milw., St. Paul & Pacific	Oct.	11,051	$8,375,170	$678,350	$9,996,171	$1,756,569	$1,653,363	$241,276	$3,787,688	$7,815,119	78.2	$2,181,052	$1,454,052	$984,518	$1,849,172	$1,446,743
	10 mos.	11,108	74,794,597	6,828,512	90,698,530	14,915,710	17,385,448	2,263,086	34,940,833	73,192,834	80.7	17,505,696	12,066,341	7,806,215	6,803,182	12,357,648
Chicago, Rock Island & Pacific	Oct.	7,511	5,563,112	676,299	6,799,987	996,861	1,228,894	245,653	2,813,611	5,569,973	81.9	1,230,014	812,358	540,198	411,772	886,952
	10 mos.	7,520	53,170,162	6,351,213	64,860,485	10,074,232	12,826,101	2,289,889	26,353,087	54,817,367	84.5	10,043,118	6,455,340	3,393,361	—639,349	6,792,841
Chicago, Rock Island & Gulf	Oct.	626	225,576	36,060	373,214	74,219	34,765	19,495	142,474	295,974	79.3	77,240	47,577	—8,505	65,623	—5,134
	10 mos.	626	2,683,908	318,990	3,988,495	552,516	377,608	186,064	1,386,840	2,768,437	69.4	1,220,058	1,034,796	369,223	253,218	404,919
Chicago, St. Paul, Minneap. & Omaha	Oct.	1,648	1,432,320	130,070	1,671,499	162,087	280,339	38,533	769,106	1,321,850	79.1	349,649	234,661	105,003	143,663	154,545
	10 mos.	1,648	12,594,928	1,419,474	15,045,837	2,158,539	2,950,344	368,826	7,142,535	13,367,391	88.8	1,678,446	854,563	—268,011	481,467	226,547
Clinchfield Railroad	Oct.	308	574,464	4,150	584,286	45,342	133,666	18,677	121,022	333,828	57.1	250,458	220,458	269,750	234,352	309,391
	10 mos.	308	5,715,069	45,335	5,821,119	448,408	1,160,204	186,021	1,119,719	3,065,004	52.7	2,756,115	2,339,102	2,698,896	2,087,841	3,062,515
Colorado & Southern	Oct.	796	584,948	38,330	684,971	73,746	136,277	13,455	274,006	525,905	76.8	159,066	57,778	34,295	113,245	65,470
	10 mos.	845	5,608,136	384,130	6,556,242	710,539	1,272,249	140,941	2,538,269	4,979,560	76.0	1,576,682	948,102	709,273	374,542	1,021,949
Fort Worth & Denver City	Oct.	902	535,024	64,336	574,487	60,953	94,192	18,353	196,216	404,676	70.4	169,811	131,754	83,420	148,585	100,044
	10 mos.	902	5,716,821	557,418	6,134,728	532,921	907,340	183,217	1,862,172	3,833,160	62.5	2,301,568	2,010,181	1,573,192	827,083	1,743,901
Columbus & Greenville	Oct.	167	107,237	9,534	126,051	42,113	16,485	4,350	46,743	120,210	95.4	5,841	—4,071	—8,886	24,094	—6,072
	10 mos.	167	933,779	85,056	1,083,008	262,164	151,480	42,992	389,205	952,515	88.0	130,493	37,549	5,090	80,421	33,335
Delaware & Hudson	Oct.	830	1,951,870	95,662	2,147,361	307,289	520,644	49,746	796,534	1,783,743	83.1	363,618	273,956	252,608	436,247	340,316
	10 mos.	830	19,433,032	1,023,116	21,364,201	2,902,764	5,100,359	465,744	7,712,289	17,405,673	81.5	3,958,528	2,715,081	2,583,084	2,267,451	3,464,461
Delaware, Lackawanna & Western	Oct.	985	3,326,056	576,128	4,410,940	271,580	759,419	113,018	2,054,157	3,327,421	75.4	1,083,519	658,519	669,885	872,546	877,353
	10 mos.	985	31,590,218	5,876,534	42,293,139	3,479,343	7,530,093	1,159,615	19,014,748	32,722,610	77.4	9,570,529	5,305,529	5,167,890	4,726,302	7,260,859
Denver & Rio Grande Western	Oct.	2,576	2,713,127	156,647	2,983,237	290,505	637,038	68,510	1,122,516	2,161,669	72.5	821,568	568,059	412,645	792,685	510,544
	10 mos.	2,576	20,044,531	1,412,096	22,580,680	4,501,622	6,520,142	613,190	8,360,301	20,582,192	91.1	1,998,488	295,136	—334,318	1,068,653	627,749
Denver & Salt Lake	Oct.	232	348,635	7,033	366,509	61,765	60,695	2,657	85,972	218,716	59.7	147,793	114,757	143,305	178,431	151,609
	10 mos.	232	2,048,698	69,023	2,214,961	421,843	552,511	24,565	638,624	1,688,903	76.2	526,058	268,603	651,628	783,037	734,509
Detroit & Mackinac	Oct.	242	87,035	3,100	97,289	10,879	18,003	918	30,175	63,166	64.9	34,123	31,006	22,215	24,606	24,998
	10 mos.	242	669,935	32,589	769,722	123,399	157,649	9,587	260,290	585,466	76.1	184,256	154,646	98,917	82,541	128,061
Detroit & Toledo Shore Line	Oct.	50	354,613	.....	355,906	25,756	24,298	8,263	84,292	156,163	43.9	199,743	162,612	109,007	106,304	115,143
	10 mos.	50	3,172,726	.....	3,191,909	245,228	236,487	80,793	790,749	1,437,556	45.0	1,754,353	1,432,287	910,429	858,779	970,960
Detroit, Toledo & Ironton	Oct.	472	478,305	221	512,925	75,218	84,087	11,361	131,770	323,346	63.0	189,579	154,554	126,725	172,082	151,393
	10 mos.	472	6,079,567	2,784	6,368,179	769,120	849,870	115,959	1,403,087	3,339,317	52.4	3,028,862	2,477,769	1,943,052	2,197,009	2,156,610
Duluth, Missabe & Iron Range	Oct.	538	2,021,379	1,553	2,330,043	194,912	302,064	3,573	416,978	948,819	40.7	1,381,224	1,082,763	1,080,945	1,886,862	1,168,973
	10 mos.	538	22,881,634	24,037	26,329,920	1,899,776	2,609,813	39,831	4,076,140	9,028,039	34.3	17,301,881	14,075,047	14,053,681	8,993,555	14,729,379
Duluth, Winnipeg & Pacific	Oct.	178	112,195	1,816	117,532	26,296	19,950	2,103	49,208	101,969	86.8	15,563	10,054	—6,022	14,175	—3,246
	10 mos.	178	1,144,068	20,257	1,197,846	235,586	189,169	20,664	479,474	966,901	80.7	230,945	154,757	—9,562	—23,939	38,186
Elgin, Joliet & Eastern	Oct.	434	1,285,816	59	1,497,774	156,593	365,957	14,570	653,699	1,222,720	81.6	275,054	180,440	95,769	361,997	174,968
	10 mos.	434	16,878,712	155	19,283,810	1,638,134	3,956,470	145,075	6,858,842	13,027,580	67.6	6,256,230	5,101,397	3,884,531	3,082,171	4,639,098
Erie	Oct.	2,277	6,644,493	441,639	7,610,333	568,302	1,384,569	183,107	2,891,340	5,288,663	69.5	2,321,670	1,959,847	1,594,303	1,985,583	1,910,736
	10 mos.	2,280	62,171,303	4,460,018	72,224,518	6,203,400	13,962,388	1,753,686	26,404,894	51,145,968	70.8	21,078,550	16,490,402	13,327,286	13,513,134	16,501,538
New Jersey & New York	Oct.	45	15,885	43,791	61,876	5,569	16,001	705	49,134	72,532	117.2	—10,656	—15,950	—30,922	—19,941	—30,911
	10 mos.	45	152,415	445,422	621,404	53,924	150,176	5,475	473,852	698,118	112.3	—76,714	—139,186	—285,682	—263,682	—285,572
New York, Susq. & Western	Oct.	143	231,976	24,783	268,862	25,429	29,612	3,467	115,219	184,839	68.7	84,023	57,962	35,391	35,389	40,800
	10 mos.	143	2,347,262	244,980	2,710,781	235,750	293,878	40,332	1,131,640	1,817,730	67.1	893,051	605,569	309,237	347,969	363,756
Florida East Coast	Oct.	684	412,462	101,286	574,071	111,447	156,335	22,310	220,433	555,364	96.7	18,707	—54,129	—90,292	—14,379	—51,474
	10 mos.	684	4,507,733	2,387,342	7,703,860	1,002,927	1,483,032	220,977	2,603,972	**5,877,742**	**76.3**	1,826,118	1,060,556	598,762	517,197	986,931
Georgia Railroad	Oct.	329	255,384	14,182	296,461	56,354	60,078	19,919	137,516	288,229	97.2	8,232	—6,328	—3,851	74,797	6,743
	10 mos.	329	2,715,662	153,636	3,136,014	380,855	600,271	191,392	1,309,324	2,623,726	83.7	512,288	438,881	527,351	560,068	635,348
Georgia & Florida	Oct.	407	89,054	2,737	95,709	22,433	20,502	8,229	38,600	95,459	99.7	250	—2,499	—459	—232	4,601
	10 mos.	407	1,055,269	26,468	1,122,224	247,713	191,818	86,631	398,319	982,696	87.6	139,528	72,074	45,312	—9,114	96,852
Grand Trunk Western	Oct.	1,032	1,890,555	95,019	2,130,678	264,320	421,078	39,882	908,188	1,708,491	80.2	422,187	361,082	199,831	113,301	288,629
	10 mos.	1,032	18,265,728	901,413	20,695,538	2,492,813	3,822,773	394,304	8,341,235	15,883,392	76.7	4,812,146	3,781,021	2,328,622	2,069,817	3,198,720
Canadian Nat'l Lines in New Eng.	Oct.	172	106,031	5,627	119,319	24,854	29,395	2,512	61,172	121,979	102.2	—2,660	—12,523	—37,767	—14,700	—35,056
	10 mos.	172	1,057,695	74,950	1,236,809	316,197	232,688	25,028	642,286	1,285,391	103.9	—48,582	—177,680	—484,204	—568,641	—455,974
Great Northern	Oct.	8,071	8,731,040	400,402	9,881,581	971,140	1,284,845	177,687	2,997,374	5,688,039	57.6	4,193,542	3,284,308	3,028,246	4,203,372	3,336,729
	10 mos.	8,090	71,577,792	4,267,663	83,018,438	9,121,654	13,054,061	1,891,658	25,941,279	52,679,342	63.5	30,339,096	23,123,616	21,980,336	20,447,594	25,015,624

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No Eddy Currents

of Steam in REmanufactured Superheater Units

Eddy currents of steam in superheater units . . . caused by internal joint ridges of patch-repaired units . . . do not sufficiently cool superheated unit walls to keep the wall temperatures within safe limits . . . the steam flow should not be restricted in any way.

When you send your unserviceable superheater units to our plant for REmanufacture, the sound straight lengths of superheater tubing are REmanufactured into reliable new superheater units . . . with new return bends machine-die-forged from the ends of the superheater tubing. Machine-die-forging is the only possible way to provide smooth interiors at the return bends without joint restrictions that cause destructive steam eddies.

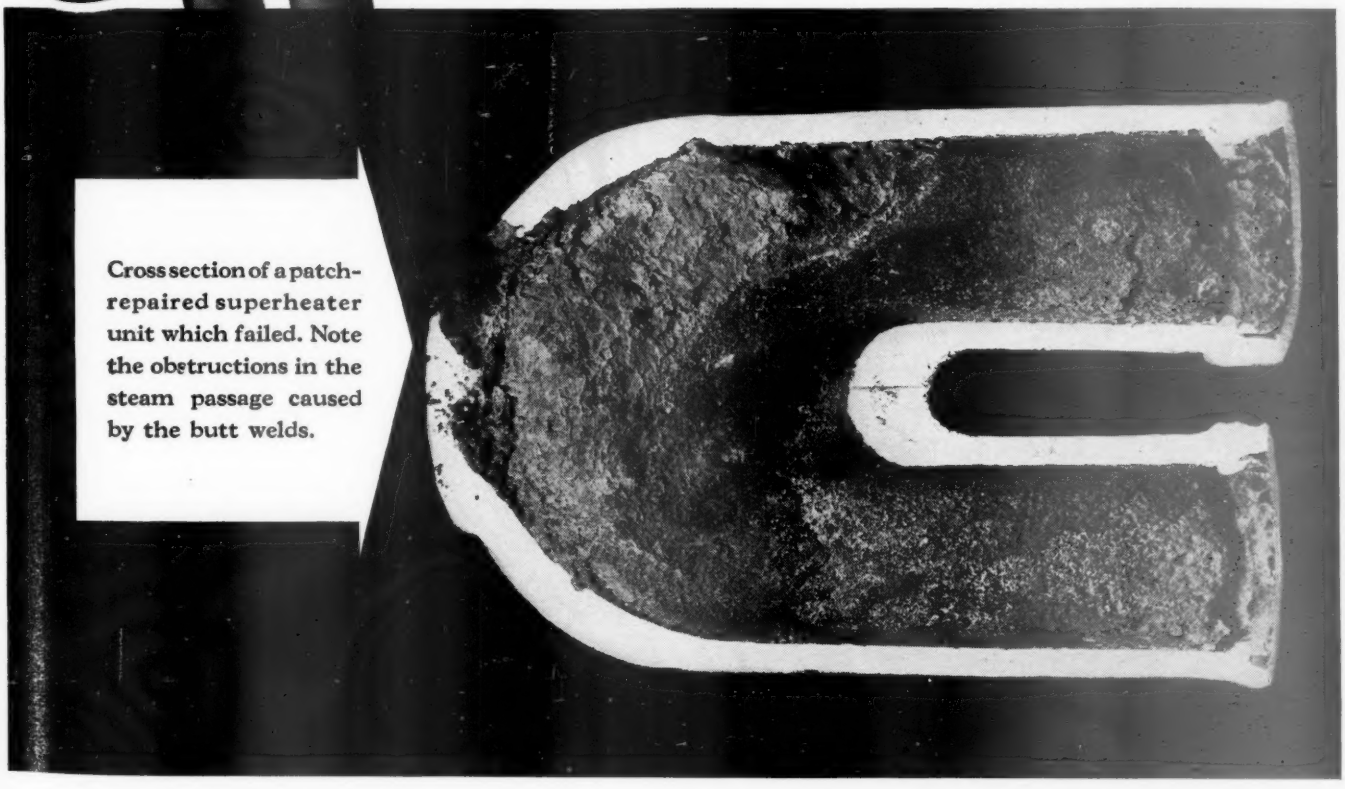
Standardize on the Elesco service for REmanufacturing unserviceable superheater units . . . it is DEPENDABLE—ECONOMICAL—EFFICIENT.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street, NEW YORK 122 S. Michigan Ave., CHICAGO
Canada: THE SUPERHEATER COMPANY, LTD., MONTREAL

Superheaters Exhaust Steam Injectors Feed Water Heaters American Throttles
Pyrometers Steam Dryers

A-1192



Cross section of a patch-repaired superheater unit which failed. Note the obstructions in the steam passage caused by the butt welds.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1937—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Green Bay & Western	Oct.	234	$126,665	$541	$132,071	$22,954	$17,333	$6,361	$51,034	$101,814	77.0	$30,257	$22,610	$10,218	$14,741	$14,970
	10 mos.	234	1,376,558	6,549	1,435,557	296,038	165,930	64,301	478,510	1,045,224	72.8	390,333	308,282	230,296	138,455	277,654
Gulf & Ship Island	Oct.	259	101,261	9,289	122,260	15,412	14,428	2,663	65,323	102,378	83.7	19,882	4,662	—4,004	—9,820	—537
	10 mos.	259	1,097,033	97,586	1,342,622	209,158	182,216	30,284	626,843	1,101,402	82.0	241,220	84,331	—17,612	—84,085	21,569
Gulf, Mobile & Northern	Oct.	936	623,220	30,432	677,553	97,003	91,111	40,761	186,168	451,307	66.61	226,246	167,246	105,879	190,915	119,994
	10 mos.	936	5,874,920	277,412	6,394,286	807,987	895,763	388,084	1,731,967	4,148,666	64.88	2,245,620	1,745,567	1,137,932	1,191,259	1,329,469
Illinois Central	Oct.	4,951	7,396,261	815,058	8,817,214	654,101	1,456,748	179,063	3,249,536	5,872,316	66.6	2,944,898	2,342,401	2,128,064	1,843,116	2,643,021
	10 mos.	4,959	66,778,078	8,105,736	81,532,151	8,082,613	17,117,521	2,044,331	31,770,939	62,887,720	77.1	18,644,431	13,344,328	11,351,861	10,234,148	16,538,735
Yazoo & Mississippi Valley	Oct.	1,619	1,398,786	90,574	1,583,370	100,496	175,453	29,286	585,917	939,456	59.3	643,914	505,667	415,836	360,613	458,170
	10 mos.	1,619	11,770,947	853,516	13,508,454	1,088,466	2,025,408	331,164	5,015,181	9,007,637	66.7	4,500,817	3,216,749	2,431,630	1,728,842	2,843,728
Illinois Central System	Oct.	6,570	8,795,047	905,632	10,400,584	754,597	1,632,201	208,349	3,835,453	6,811,772	65.5	3,588,812	2,848,781	2,554,100	2,214,029	3,111,391
	10 mos.	6,578	78,549,025	8,959,252	95,040,605	9,171,079	19,142,929	2,375,495	36,786,120	71,895,357	75.6	23,145,248	16,543,431	13,879,241	12,053,787	19,478,213
Illinois Terminal	Oct.	504	437,659	71,781	557,638	70,504	73,581	16,163	182,297	362,985	65.09	194,653	138,915	107,997	151,474	126,737
	10 mos.	504	4,083,325	712,819	5,227,966	550,347	731,019	161,935	1,673,773	3,308,527	64.20	1,919,439	1,533,363	1,272,783	1,235,677	1,462,252
Kansas City Southern	Oct.	878	1,262,150	22,836	1,402,573	130,660	183,987	51,832	374,452	804,859	57.4	597,714	509,714	429,694	294,849	467,715
	10 mos.	878	10,656,469	202,343	11,974,143	1,197,099	1,726,821	496,921	3,468,093	7,545,004	63.0	4,429,139	3,461,139	2,887,055	2,632,749	3,230,666
Kansas, Oklahoma & Gulf	Oct.	326	246,024	684	249,747	28,038	15,318	8,883	48,511	103,602	41.5	146,145	123,223	102,631	64,235	104,726
	10 mos.	326	1,986,973	5,695	2,023,061	248,933	153,241	88,708	439,530	935,369	46.2	1,087,692	900,388	708,344	654,356	729,283
Lake Superior & Ishpeming	Oct.	156	298,184	89	349,619	35,165	25,586	752	55,116	120,130	34.4	229,489	175,609	175,304	232,853	191,283
	10 mos.	156	2,664,163	1,226	3,129,686	312,337	257,123	7,636	498,576	1,140,199	36.4	1,989,487	1,487,568	1,492,015	1,216,043	1,636,802
Lehigh & Hudson River	Oct.	96	153,615	89	154,562	15,856	16,776	3,839	47,914	91,552	59.2	63,010	44,608	30,188	34,240	33,766
	10 mos.	96	1,383,917	3,049	1,394,593	166,297	205,574	39,478	470,104	953,760	68.4	440,833	309,514	188,648	146,057	225,044
Lehigh & New England	Oct.	215	318,504	.....	320,514	32,434	64,607	6,131	118,669	236,487	73.8	84,027	61,217	69,652	78,365	89,511
	10 mos.	215	3,083,859	1,591	3,109,433	306,367	692,323	65,268	1,131,523	2,351,756	75.6	757,677	614,504	663,101	650,776	855,742
Lehigh Valley	Oct.	1,309	3,746,277	193,337	4,215,756	237,304	778,414	113,300	1,804,520	3,072,986	72.9	1,142,770	866,533	701,660	1,095,165	886,494
	10 mos.	1,320	36,334,433	2,187,998	41,134,880	2,708,771	8,287,267	1,134,793	17,555,673	31,250,121	76.0	9,884,759	7,015,627	5,041,878	7,179,007	6,915,281
Louisiana & Arkansas	Oct.	606	506,655	11,254	538,265	72,750	77,116	38,940	151,277	361,768	67.2	176,497	131,923	101,045	—11,416	117,610
	10 mos.	606	4,669,564	96,593	4,942,143	651,387	715,588	325,667	1,409,548	3,316,278	67.1	1,625,865	1,274,008	1,034,278	1,005,394	1,192,376
Louisiana, Arkansas & Texas	Oct.	255	120,207	263	125,371	32,045	12,543	4,934	53,285	101,766	81.2	23,605	16,469	—2,121	—52,248	—1,072
	10 mos.	255	1,063,944	2,323	1,115,898	224,185	111,490	49,568	423,975	853,101	76.5	262,797	238,970	59,745	—18,832	68,167
Louisville & Nashville	Oct.	4,940	6,836,070	601,434	7,976,256	852,325	1,761,170	177,332	2,853,176	5,939,385	74.5	2,036,871	1,430,803	1,597,162	2,150,463	1,949,639
	10 mos.	4,941	64,963,420	5,938,585	76,046,617	8,237,888	17,139,164	1,872,803	26,426,963	56,759,246	74.6	19,287,371	12,705,132	13,893,560	15,592,920	17,372,063
Maine Central	Oct.	1,009	886,132	73,828	1,059,251	163,733	190,005	11,433	382,742	786,018	74.2	273,233	204,309	153,988	205,089	198,537
	10 mos.	1,009	8,859,110	901,321	10,636,692	1,701,263	1,781,671	123,952	3,667,590	7,662,459	72.0	2,974,233	2,281,896	1,798,000	1,004,012	2,240,588
Midland Valley	Oct.	351	153,140	67	156,463	16,256	11,513	2,336	37,560	74,103	47.4	82,360	71,445	60,554	72,161	62,737
	10 mos.	351	1,263,233	169	1,287,828	176,373	119,845	25,023	317,926	699,203	54.3	588,625	507,507	418,398	421,871	439,979
Minneapolis & St. Louis	Oct.	1,530	809,674	11,182	861,058	137,090	129,278	42,911	316,630	664,294	77.1	196,764	149,908	65,457	107,713	91,437
	10 mos.	1,530	6,678,208	113,932	7,147,204	1,088,903	1,186,112	416,417	2,918,508	5,987,358	83.8	1,159,846	901,055	311,393	657,879	572,744
Minneapolis, St. Paul & S. S. Marie	Oct.	4,300	2,258,397	79,910	2,533,184	343,216	379,751	61,867	1,033,512	1,918,350	75.7	614,834	410,446	241,144	517,672	340,140
	10 mos.	4,301	20,900,522	1,117,290	23,929,357	3,303,859	4,073,631	607,843	9,592,158	18,600,110	77.7	5,329,247	4,131,975	2,654,231	1,946,198	3,637,432
Duluth, South Shore & Atlantic	Oct.	549	205,180	15,315	246,419	50,896	37,685	4,758	92,220	193,628	78.6	52,791	39,157	25,383	84,173	32,509
	10 mos.	549	2,139,568	154,148	2,514,713	377,693	423,588	45,184	900,600	1,832,369	72.9	682,344	590,957	483,552	587,837	555,761
Spokane International	Oct.	163	74,392	1,194	82,164	12,682	8,514	2,415	25,005	53,161	64.7	29,003	23,662	17,791	19,998	19,428
	10 mos.	163	649,352	14,236	725,604	150,384	75,949	21,654	239,548	536,716	74.0	188,888	151,585	107,888	85,636	124,257
Mississippi Central	Oct.	150	81,906	2,996	87,155	22,604	12,428	7,290	24,849	72,408	83.1	14,747	9,951	3,016	10,617	5,208
	10 mos.	150	738,378	26,843	789,123	195,211	116,032	71,044	224,401	659,367	83.6	129,756	94,124	39,300	125,778	61,454
Missouri-Arkansas	Oct.	364	98,974	1,451	106,870	21,970	11,715	7,307	34,342	79,623	74.5	27,247	26,414	14,432	—1,119	15,487
	10 mos.	364	889,807	12,536	961,026	241,866	114,054	60,150	336,241	795,341	82.8	165,685	139,816	34,153	40,080	44,010
Missouri-Illinois	Oct.	193	130,196	882	133,216	24,034	15,679	2,658	45,810	93,576	70.2	39,640	29,895	11,821	22,479	14,845
	10 mos.	193	1,256,767	6,808	1,283,635	253,992	146,964	27,646	391,393	873,014	68.0	410,621	353,996	195,862	52,306	226,138
Missouri-Kansas-Texas Lines	Oct.	3,293	2,472,330	234,977	2,987,077	430,105	540,047	126,934	1,068,756	2,309,702	77.3	677,375	336,752	126,895	765,913	229,641
	10 mos.	3,293	22,741,856	1,972,406	27,178,645	3,455,417	4,400,504	1,234,764	9,736,101	20,263,065	74.6	6,915,580	4,995,617	2,752,776	2,945,745	3,745,715
Missouri Pacific	Oct.	7,174	7,121,881	500,345	8,285,720	1,211,019	1,558,743	245,085	3,065,547	6,362,843	76.8	1,922,877	1,532,003	1,035,709	1,520,025	1,394,802
	10 mos.	7,171	66,986,972	4,735,127	78,019,410	10,990,602	14,812,429	2,474,662	28,292,944	59,564,510	76.3	18,454,900	15,026,070	10,150,271	8,738,158	13,653,024

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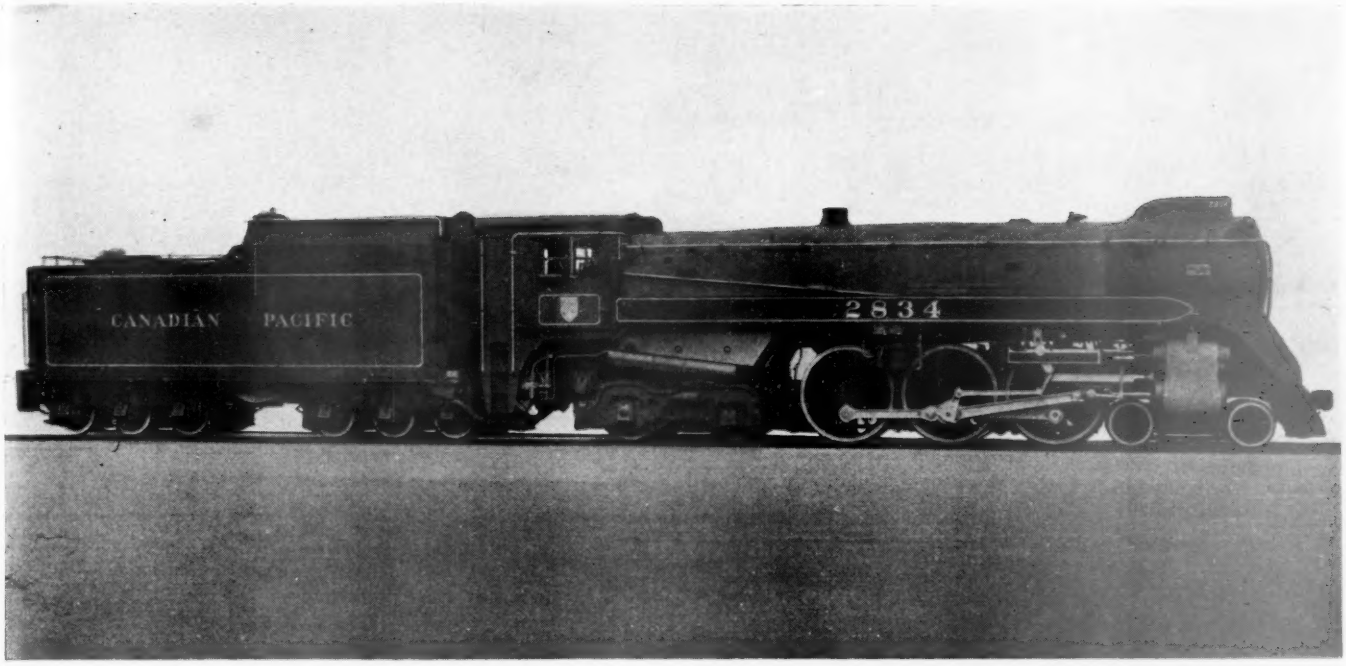

BUILT FOR THE CANADIAN PACIFIC

Power, speed, and an attractive semi-streamlined appearance are the outstanding features of the 30 Hudson types of advanced design now being delivered.

NEW POWER—NEW PROFITS

Weight on Drivers	186,800 pounds	Diameter of Drivers	75 inches
Weight of Engine	354,000 pounds	Boiler Pressure	275 pounds
Cylinders	22 x 30 inches	Tractive Power	45,300 pounds

MONTREAL LOCOMOTIVE WORKS, LIMITED

MONTREAL CANADA

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1937—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation 1937	After depreciation 1936	Before depreciation
Gulf Coast Lines	Oct.	1,763	$972,629	$61,413	$1,096,924	$200,970	$222,166	$48,218	$406,374	$925,492	84.37	$171,432	$103,887	$3,691	$80,633	$36,815
	10 mos.	1,763	12,224,639	464,718	13,337,316	1,881,834	2,015,985	470,916	3,943,964	8,819,772	66.13	4,517,544	4,041,851	2,736,077	726,628	3,066,716
International Great Northern	Oct.	1,154	955,374	91,850	1,187,493	174,051	209,299	30,517	522,842	996,984	83.96	190,509	132,549	19,645	110,557	49,360
	10 mos.	1,154	8,951,396	938,147	11,062,716	1,582,894	2,027,453	318,204	4,664,680	9,185,509	83.03	1,877,207	1,500,150	378,576	126,861	675,901
Mobile & Ohio	Oct.	1,194	979,525	37,493	1,064,451	149,647	235,719	43,121	372,067	844,233	79.3	220,218	163,246	77,028	220,109	127,187
	10 mos.	1,196	9,320,575	349,800	10,246,334	1,310,455	2,168,063	433,132	3,672,363	8,055,210	78.6	2,191,124	1,613,994	959,467	901,376	1,462,359
Monongahela	Oct.	171	414,040	754	417,397	35,834	34,961	447	94,484	169,909	40.7	247,488	215,952	127,044	167,911	132,535
	10 mos.	171	3,793,251	9,088	3,833,872	410,842	302,249	4,796	843,708	1,596,702	41.6	2,237,170	1,902,178	1,049,715	1,167,301	1,104,832
Montour	Oct.	56	223,403	.....	225,199	15,835	49,359	1,059	55,814	130,684	58.0	94,515	64,108	92,632	104,291	106,688
	10 mos.	56	2,159,884	135	2,173,128	144,317	440,901	10,221	524,070	1,193,962	54.9	979,166	691,316	948,094	816,293	1,079,449
Nashville, Chattanooga & St. Louis	Oct.	1,117	983,370	93,394	1,202,230	166,045	318,332	63,581	500,890	1,107,820	92.1	94,410	18,308	10,446	217,788	54,465
	10 mos.	1,119	9,924,817	994,492	12,201,511	1,526,658	2,913,644	632,099	4,754,719	10,438,177	85.5	1,763,334	1,013,333	973,660	1,056,572	1,405,438
Nevada Northern	Oct.	165	60,250	1,216	66,886	11,372	3,813	1,102	11,464	32,869	49.1	34,017	23,858	26,499	14,158	32,558
	10 mos.	165	509,137	13,124	573,266	90,507	38,354	10,230	106,909	291,090	50.7	282,176	190,977	211,699	137,549	271,265
New York Central	Oct.	11,110	22,686,213	5,329,477	31,835,274	3,754,264	7,061,030	623,249	12,526,323	25,295,156	79.5	6,540,118	4,350,433	3,023,513	5,791,607	4,375,047
	10 mos.	11,167	219,790,881	54,784,126	310,240,195	34,353,013	65,933,921	5,693,501	116,046,480	236,369,538	76.2	73,870,657	47,489,025	35,178,568	38,471,583	48,568,551
Pittsburgh & Lake Erie	Oct.	233	1,704,427	52,241	1,818,554	228,417	713,850	29,329	642,512	1,704,777	93.7	113,777	—13,098	201,581	476,861	398,739
	10 mos.	233	19,259,071	574,585	20,473,489	1,867,847	7,046,497	279,729	6,295,453	16,366,118	79.9	4,107,371	2,343,357	4,189,793	4,394,859	5,778,832
New York, Chicago & St. Louis	Oct.	1,704	3,289,945	91,849	3,502,070	387,872	540,970	121,310	1,272,942	2,439,787	69.7	1,062,283	866,778	612,846	918,413	754,067
	10 mos.	1,704	33,787,499	812,334	35,807,226	3,904,920	5,527,411	1,188,207	12,020,127	23,914,262	66.8	11,892,964	9,817,364	7,110,862	7,412,233	8,480,599
New York, New Haven & Hartford	Oct.	2,028	3,948,692	2,173,717	6,915,197	1,052,335	1,439,276	103,978	2,745,433	5,725,157	82.8	1,190,040	725,040	117,506	1,271,689	392,824
	10 mos.	2,034	38,998,668	22,226,187	68,795,697	9,250,474	12,602,683	1,187,538	26,429,927	53,606,391	77.9	15,189,306	10,364,306	4,343,647	5,566,803	7,156,580
New York Connecting	Oct.	20	153,033	.....	166,706	19,871	8,079	.....	31,424	60,561	36.3	106,145	67,100	39,852	91,805	39,852
	10 mos.	20	2,034,096	.....	2,157,023	156,861	78,502	.....	287,079	534,505	24.8	1,622,518	1,245,538	1,026,626	1,146,897	1,026,626
New York, Ontario & Western	Oct.	576	464,880	4,576	520,000	75,977	127,449	11,179	264,995	502,463	96.6	17,537	—13,038	—38,000	44,446	—15,240
	10 mos.	576	4,528,879	491,815	5,534,243	606,670	1,260,348	114,542	2,671,691	4,875,858	88.1	658,385	247,979	—109,075	962,406	125,701
Norfolk & Western	Oct.	2,201	8,130,995	186,323	8,556,860	789,913	1,640,030	137,138	1,920,434	4,695,893	54.9	3,860,967	2,695,741	3,089,224	3,851,081	3,502,359
	10 mos.	2,202	76,949,861	1,890,684	81,147,052	8,583,643	14,889,785	1,346,784	18,036,774	45,048,989	55.5	36,098,063	24,321,622	27,565,579	27,343,917	31,574,890
Norfolk Southern	Oct.	830	393,704	7,293	415,779	89,793	54,202	24,859	158,184	345,409	83.1	70,370	37,071	11,106	21,324	22,210
	10 mos.	833	3,934,851	79,498	4,180,210	789,205	544,573	235,176	1,503,564	3,251,364	77.8	928,846	592,957	370,132	218,684	480,674
Northern Pacific	Oct.	6,721	5,535,547	315,465	6,318,870	531,800	1,047,205	158,863	2,251,099	4,271,137	67.6	2,047,733	1,455,138	1,606,777	2,086,728	1,884,058
	10 mos.	6,726	46,911,983	3,864,527	55,479,925	6,463,884	12,272,521	1,695,802	20,542,364	44,214,527	79.7	11,265,398	6,546,392	9,666,061	7,789,454	12,368,833
Northwestern Pacific	Oct.	351	251,092	59,240	337,500	61,096	53,497	4,217	190,124	320,657	95.0	16,843	—1,571	—12,374	48,279	1,057
	10 mos.	351	2,325,775	675,939	3,271,778	567,234	551,180	42,975	1,716,952	3,008,197	91.9	263,581	93,876	—9,529	265,534	125,247
Oklahoma City-Ada-Atoka	Oct.	132	48,603	417	51,269	7,704	6,692	820	12,139	27,988	54.6	23,281	19,705	12,320	968	12,328
	10 mos.	132	412,909	4,600	440,992	111,025	24,924	8,029	115,017	277,868	63.0	163,124	135,785	67,970	111,479	68,043
Pennsylvania	Oct.	10,308	30,034,671	5,959,254	39,902,999	3,803,494	7,961,841	746,148	14,158,165	27,829,387	69.7	12,073,612	7,807,727	7,278,170	9,231,179	9,503,589
	10 mos.	10,308	297,494,701	59,655,603	393,246,228	42,211,742	85,069,971	6,816,337	137,996,675	288,607,704	73.4	104,638,524	69,932,655	65,328,108	68,027,884	86,249,049
Long Island	Oct.	396	591,225	1,264,978	1,953,958	190,179	390,203	Cr. 22,089	976,417	1,572,219	80.5	381,739	111,119	—30,005	—106,292	66,930
	10 mos.	396	5,386,266	14,628,384	21,017,522	2,221,170	4,062,817	153,464	9,785,533	16,744,201	79.7	4,273,321	1,516,885	—108,779	907,668	864,914
Pennsylvania-Reading Seashore Lines	Oct.	411	251,328	129,064	409,652	71,875	67,230	7,807	271,339	439,098	107.2	—29,446	—98,549	—175,720	—75,533	—159,304
	10 mos.	412	2,577,085	2,768,378	5,597,175	801,169	858,082	117,307	3,031,929	5,040,529	90.1	556,646	—336,121	—1,363,985	—939,146	—1,200,251
Pere Marquette	Oct.	2,115	2,802,386	63,895	3,038,424	392,395	577,043	69,484	1,077,694	2,216,633	73.0	821,791	652,757	519,874	738,479	735,458
	10 mos.	2,115	24,699,647	903,449	27,275,334	3,556,106	5,739,836	675,354	9,787,475	20,761,109	76.1	6,514,225	5,098,510	4,146,160	4,260,426	6,277,781
Pittsburg & Shawmut	Oct.	100	62,219	288	63,241	15,408	15,592	1,457	19,640	56,306	89.0	6,935	4,936	6,499	7,633	11,201
	10 mos.	100	532,969	2,938	542,585	144,756	166,304	13,963	173,230	537,509	99.0	5,076	—4,336	31,542	—11,177	74,937
Pittsburgh & West Virginia	Oct.	138	314,817	.....	331,005	80,867	71,943	17,950	79,667	274,140	82.8	56,865	31,367	84,932	88,870	109,482
	10 mos.	138	3,424,491	6,440	3,592,092	678,380	850,848	185,989	756,060	2,701,433	75.2	890,659	664,920	1,019,315	1,060,481	1,248,993
Pittsburg, Shawmut & Northern	Oct.	190	84,171	75	85,721	17,140	15,179	1,346	38,182	78,432	91.5	7,289	2,095	—6,045	11,252	—4,217
	10 mos.	190	830,659	309	844,683	173,253	194,622	13,871	311,152	757,143	89.6	87,540	37,341	—32,358	36,307	—13,884
Reading	Oct.	1,452	4,456,081	276,817	4,958,024	415,955	854,119	75,997	2,008,233	3,501,893	70.6	1,456,131	1,201,298	1,275,706	1,530,849	1,532,435
	10 mos.	1,452	44,765,888	2,932,698	50,040,039	3,905,229	9,040,768	735,817	19,095,235	34,671,761	69.3	15,368,278	11,515,561	12,057,105	11,564,180	14,637,220
Richmond, Fredericksburg & Potomac	Oct.	117	354,534	157,058	633,273	92,506	135,668	9,680	236,491	512,318	80.9	120,955	70,873	54,703	86,218	81,733
	10 mos.	117	3,756,277	2,141,763	7,218,883	765,088	1,345,692	94,361	2,667,985	5,338,048	73.9	1,880,835	1,337,675	914,156	589,931	1,179,945

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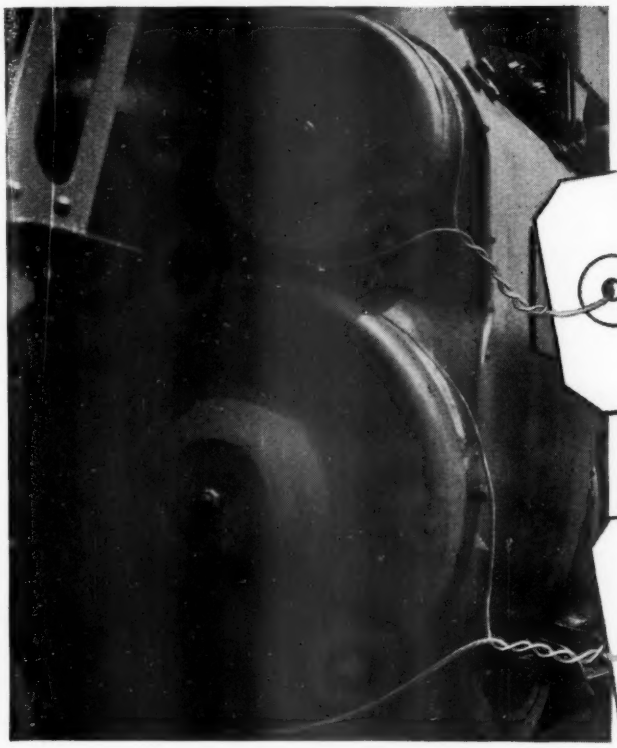

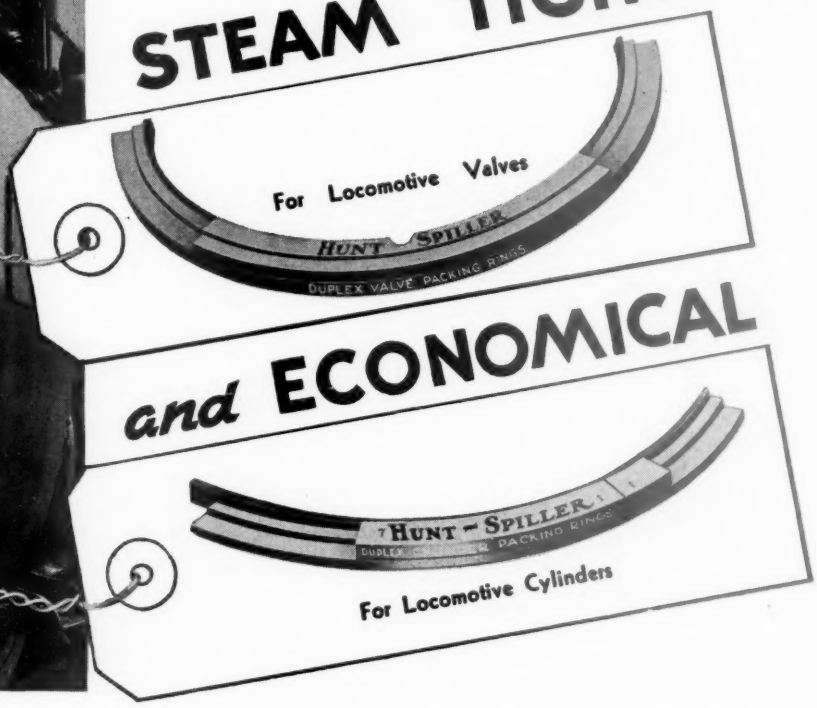

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REVENUES AND EXPENSES OF RAILWAYS

MONTH OF OCTOBER AND TEN MONTHS OF CALENDAR YEAR 1937—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures	Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Operating income	Net railway operating income: After depreciation: 1937	1936	Before depreciation
Rutland	Oct.	407	$196,991	$32,865	$292,347	$48,847	$59,623	$11,516	$152,299	$288,191	98.6	$4,156	—$21,466	—$20,134	$34,398	—$8,825
	10 mos.	407	2,014,214	333,710	2,992,130	433,124	597,343	108,114	1,440,943	2,739,275	91.5	252,855	14,207	29,869	89,812	143,053
St. Louis-San Francisco	Oct.	4,885	3,549,459	336,130	4,237,340	624,497	988,989	113,189	1,662,186	3,546,104	83.7	691,236	337,416	434,929	1,000,801	698,760
	10 mos.	4,916	35,225,527	3,166,286	41,980,941	6,206,656	9,480,531	1,129,333	15,926,941	34,528,729	82.2	7,452,212	4,835,170	5,159,595	4,580,710	7,785,250
St. Louis, San Francisco & Texas	Oct.	261	115,484	815	122,542	32,749	15,182	8,061	61,172	123,742	101.0	—1,200	—8,921	—41,637	—26,410	—41,535
	10 mos.	261	1,254,082	5,772	1,316,636	275,738	143,531	75,712	559,237	1,123,751	85.4	192,885	141,786	—167,789	—383,617	—166,772
St. Louis Southwestern Lines	Oct.	1,706	1,813,062	32,196	1,929,299	263,867	303,888	80,633	631,050	1,360,330	70.5	568,969	457,218	317,497	401,784	366,925
	10 mos.	1,734	16,825,393	291,061	17,882,114	3,010,334	3,030,178	783,575	5,781,802	13,397,008	74.9	4,485,106	3,677,043	1,952,268	2,655,623	2,451,521
Seaboard Air Line	Oct.	4,307	2,670,296	325,502	3,359,790	515,347	738,993	162,022	1,327,491	2,936,125	87.4	423,665	158,665	87,218	452,160	255,858
	10 mos.	4,307	27,201,488	4,596,094	35,343,481	4,843,563	7,101,766	1,590,981	13,046,355	28,545,633	80.8	6,797,848	4,202,848	3,283,620	2,121,889	4,914,662
Southern Railway	Oct.	6,639	7,035,563	813,848	8,559,295	1,077,154	1,690,291	145,308	3,108,869	6,351,836	74.2	2,207,459	1,570,457	1,149,143	2,227,431	1,404,638
	10 mos.	6,639	67,921,804	8,662,861	83,840,653	10,419,407	16,206,895	1,493,279	28,981,285	60,282,288	71.9	23,558,365	17,513,632	13,840,047	15,627,082	16,440,223
Alabama Great Southern	Oct.	315	539,684	61,991	647,040	91,586	137,340	13,901	220,756	487,749	75.4	159,291	102,454	107,314	102,498	132,829
	10 mos.	315	5,263,174	602,197	6,282,835	886,051	1,376,417	124,908	1,910,535	4,517,260	71.9	1,765,575	1,214,689	1,061,336	756,773	1,295,889
Cinn., New Orleans & Texas Pacific	Oct.	336	1,217,360	92,648	1,393,868	162,725	284,654	29,123	350,828	881,313	63.2	512,555	363,120	358,323	484,333	408,210
	10 mos.	336	12,527,655	1,124,103	14,534,867	1,743,237	2,682,454	268,547	3,571,724	8,803,037	60.6	5,731,830	4,397,952	4,166,975	4,059,836	4,667,100
Georgia Southern & Florida	Oct.	397	138,643	28,520	187,099	39,717	43,949	1,670	80,187	171,591	91.7	15,508	—2,975	—4,491	2,454	2,015
	10 mos.	397	1,350,593	449,783	2,034,721	342,674	412,678	18,464	798,602	1,650,289	81.1	384,432	218,244	179,372	47,549	246,946
New Orleans & Northeastern	Oct.	204	264,610	20,027	303,458	40,552	40,092	6,309	105,842	205,233	67.6	98,225	53,528	30,249	60,057	36,218
	10 mos.	204	2,374,881	222,016	2,772,866	355,842	352,590	56,852	817,843	1,696,541	61.2	1,076,325	689,523	496,208	308,507	556,362
Northern Alabama	Oct.	100	67,083	2,105	70,994	14,431	1,879	1,379	22,721	42,585	60.0	28,409	21,357	4,223	10,229	4,272
	10 mos.	100	642,232	18,191	679,550	127,641	15,190	13,259	206,795	382,737	56.3	296,813	234,181	101,265	83,598	101,770
Southern Pacific	Oct.	8,764	12,238,400	1,899,103	15,432,897	1,425,792	2,394,160	347,854	6,378,965	11,457,177	74.2	3,975,720	2,794,925	1,885,284	3,588,909	2,408,222
	10 mos.	8,767	113,570,826	19,543,605	145,619,681	14,086,080	24,853,897	3,442,396	58,551,509	110,135,154	75.6	35,484,527	24,109,196	16,666,043	19,861,957	21,725,197
Southern Pacific Steamship Lines	Oct.	....	591,754	24,533	642,113	17,528	116,957	18,116	465,460	634,217	98.8	7,896	—10,299	—10,552	80,008	24,645
	10 mos.	....	5,901,746	263,570	6,431,944	184,469	993,503	177,483	4,700,695	6,237,139	97.0	194,805	29,003	—33,993	—52,057	317,433
Texas & New Orleans	Oct.	4,420	3,405,823	313,848	4,059,238	557,281	717,311	131,976	1,529,053	3,165,730	78.0	893,508	641,626	417,914	895,713	550,933
	10 mos.	4,424	33,041,576	3,070,108	39,172,627	5,823,598	6,959,849	1,270,672	13,608,621	30,023,977	76.6	9,148,650	6,305,931	4,045,271	3,474,200	5,367,663
Spokane, Portland & Seattle	Oct.	946	771,843	41,848	866,357	85,250	86,010	9,306	304,762	516,548	59.6	349,809	289,754	220,718	278,159	236,343
	10 mos.	946	6,637,415	489,962	7,657,494	994,667	913,020	97,065	2,799,490	5,099,665	66.6	2,557,829	2,077,774	1,450,672	1,100,410	1,605,851
Tennessee Central	Oct.	286	197,231	5,069	214,878	29,798	36,340	6,043	75,897	157,736	73.4	57,142	44,565	27,337	73,051	33,333
	10 mos.	286	1,966,060	52,432	2,134,754	361,577	316,625	62,225	733,774	1,573,401	73.7	561,353	468,286	291,176	391,860	350,881
Texas & Pacific	Oct.	1,936	2,152,183	261,290	2,692,428	295,209	473,838	83,372	842,181	1,830,763	68.0	861,665	645,494	537,737	621,460	630,874
	10 mos.	1,944	21,099,505	2,341,629	25,432,480	2,730,555	4,636,156	804,716	7,737,213	17,275,422	67.9	8,157,058	6,245,802	4,924,881	4,367,598	5,886,894
Texas Mexican	Oct.	162	96,197	464	112,813	20,111	18,889	3,601	43,671	93,382	82.8	19,431	12,629	6,701	4,183	8,544
	10 mos.	162	1,113,309	5,147	1,255,688	185,061	185,220	35,298	413,832	894,195	71.2	361,493	315,265	234,372	156,010	252,810
Toledo, Peoria & Western	Oct.	239	252,525	.....	256,067	41,765	14,578	18,331	61,390	148,713	58.1	107,354	73,719	52,434	52,644	63,346
	10 mos.	239	1,981,888	10	2,010,107	484,423	148,805	176,273	482,367	1,405,066	69.9	605,041	418,511	251,728	276,643	348,246
Union Pacific System	Oct.	9,911	13,964,593	1,488,165	16,709,871	1,280,810	2,722,222	380,309	5,226,999	10,410,587	62.3	6,299,284	5,311,767	3,968,164	4,821,494	4,555,596
	10 mos.	9,913	110,001,733	14,716,959	136,436,235	16,097,145	26,127,886	3,837,455	45,620,246	99,748,066	73.1	36,688,169	24,876,174	17,503,126	17,800,473	23,165,830
Utah	Oct.	111	134,459	.....	134,778	15,616	31,678	501	33,146	85,569	63.5	49,209	38,152	33,091	46,908	43,087
	10 mos.	111	1,006,690	.....	1,008,056	168,155	330,555	4,324	259,697	807,577	80.1	200,479	106,260	96,146	152,427	195,936
Virginian	Oct.	618	1,835,483	3,767	1,897,675	100,397	345,988	23,803	298,111	793,136	41.8	1,104,539	879,539	966,284	1,016,492	1,060,414
	10 mos.	618	15,885,515	38,369	16,545,861	1,242,216	3,188,996	213,603	2,616,205	7,552,786	45.6	8,993,075	6,936,075	7,747,535	7,243,066	8,691,840
Wabash	Oct.	2,433	3,516,770	247,908	4,040,961	602,452	707,860	153,388	1,630,076	3,254,428	80.5	786,533	578,162	249,451	677,123	428,776
	10 mos.	2,437	34,186,462	2,202,667	38,938,978	5,095,026	7,314,527	1,538,767	14,783,459	30,250,389	77.7	8,688,589	6,602,368	3,591,272	4,358,908	5,377,946
Ann Arbor	Oct.	293	300,921	4,086	314,533	32,612	63,225	12,873	145,447	265,967	84.6	48,566	29,406	16,989	50,848	35,244
	10 mos.	293	3,178,369	36,111	3,340,742	296,976	787,148	125,507	1,413,209	2,741,200	82.1	599,542	409,448	267,216	310,728	458,337
Western Maryland	Oct.	879	1,385,132	7,714	1,428,933	163,358	262,081	38,369	382,650	894,110	62.6	534,823	434,823	440,819	537,371	539,901
	10 mos.	881	14,548,570	83,348	15,016,353	2,074,369	3,085,871	395,913	3,757,465	9,829,857	65.5	5,186,496	4,031,496	4,122,816	3,808,496	5,086,381
Western Pacific	Oct.	1,207	1,867,634	40,782	1,943,001	236,961	317,111	57,410	686,896	1,362,756	70.1	580,245	492,004	322,199	377,731	376,937
	10 mos.	1,207	13,204,252	398,147	13,968,571	3,197,755	3,090,100	582,287	5,579,330	12,981,999	92.9	982,572	375,466	—489,030	—346,131	51,621
Wheeling & Lake Erie	Oct.	512	1,267,986	1,665	1,335,079	173,466	256,758	34,074	456,772	948,992	71.1	386,087	222,488	314,926	372,121	391,065
	10 mos.	512	13,259,016	19,646	14,008,556	1,702,136	2,834,208	337,692	4,297,840	9,457,026	67.5	4,551,530	3,047,355	4,082,621	2,770,753	4,827,277